

# The Vegetable and Small Fruit Gazette

Vol. 8, No. 9- September 2004

Horticulture Department  
The Pennsylvania State University

## **In this Issue:**

[Comments from the Editor](#)

[Schedule for Agent Articles](#)

[Grower Workshop on High Tunnels](#)

[Brown Marmorated Stink Bug: A New Pest That May Damage Fruits and Vegetables](#)

[The Organic Way- How Nutrient Flow Affects Soil and Plant Health](#)

[That's a Berry Good Question!!!](#)

[PA Berry Producer Statistics from the Census of Agriculture](#)

[Potato Musings](#)

[Figuring Your Potato Yields](#)

[Upcoming Meetings](#)

---

**Tip for the Month--** “Being happy doesn't mean everything's perfect, it just means you've decided to see beyond the imperfections”

---

## **Comments from the Editor**

Bill Lamont, Department of Horticulture

Looks like rain in the forecast. It makes work in the field and harvesting very interesting. We have been promoting the Penn State “Blue and White” Potato Salad at the Cellar Market. Time to start getting the tailgating crowd ready to buy. I want to thank **Emelie Swackhamer** for forwarding an excellent article written by Karen Bernhard: **Brown Marmorated Stink Bug: A New Pest That May Damage Fruits And Vegetables** for the September issue and I look forward to receiving Cheryl Bjornson's article for the October 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.

[Back to top](#)

---

## Schedule for Agent Articles

Bill Lamont, Department of Horticulture

October	Cheryl Bjornson
November	John Esslinger
December	Andy Muza

[Back to top](#)

---

## Penn State High Tunnel Research and Education Facility Grower's Workshop

Bill Lamont, Department of Horticulture

A workshop for growers will be held at the High Tunnel Research and Education Facility Horticulture Research Farm, Gate H, Rock Springs, PA on Monday September 13th.

### The schedule is as follows:

9:00-9:30 AM: Introductions: Dr. Bill Lamont, Department of Horticulture, Penn State

9:30-10:15: Constructing A High Tunnel: Options and Considerations: Dr. Mike Orzolek, Bruce Dye and Thomas Plummer, Department of Horticulture, Penn State.

10:15-11:00: The Production of Vegetables in High Tunnels: Dr. Mike Orzolek, Department of Horticulture, Penn State University

11:00-11:45: Water and Nutrient Management in High Tunnels: Jay Baratelli, T-Tape International and Dr. Bill Lamont, Department of Horticulture, Penn State

11:45-1:00: LUNCH –Provided (Travel 1 mile to Livestock Evaluation Facility)

1:00-1:30: Transitioning to Organic Production in High Tunnels: Adam Montri, Graduate Student, Department of Horticulture, Penn State and Dr. Elsa Sanchez, Department of Horticulture.

1:30-2:00: The Production of Cut Flowers in High Tunnels: Lisa White, Facility Manager, Department of Horticulture, Penn State

2:00-2:30: IPM in High Tunnels using Biological Control: Lisa White, Facility Manager, Department of Horticulture, Penn State.

2:30-3:00: Small Fruit Production: Kathy Demchak, Department of Horticulture, Penn State.

3:00-3:45: Penn State Energy Recovery Program-Recycling Energy from Used Agricultural Plastics: Jim Garthe, Department of Biological and Agricultural Engineering

3:45-4:00: Questions and Answers

**Registration:**

\$25.00 per person or \$40 for a couple. Registration includes lunch and a 157- page high tunnel manual. Please pre-register by September 9th. Make checks payable to Penn State University and mail to Lisa White, Department of Horticulture, 102 Tyson Building, The Pennsylvania State University, University Park, PA 16802

For further information contact Lisa White at 814-692-4635 or e-mail: ldw112@psu.edu

[Back to top](#)

---

## **Brown Marmorated Stink Bug: A New Pest That May Damage Fruits and Vegetables**

Karen Berhhard

Lehigh County Cooperative Extension

The brown marmorated stink bug, *Halyomorpha halys*, is an insect pest native to the Far East which was recently accidentally introduced to Eastern Pennsylvania. It was first noticed by residents of the Lehigh Valley sometime around the fall of 1996, and the first reports came in to the Lehigh County Cooperative Extension office in 1998. It was correctly identified in October of 2001 by E. Richard Hoebeke of Cornell University.

*Halyomorpha halys* is a typical stink bug with a wide host range and a preference for fruits or pods, although it also feeds on other above-ground plant parts. It has the potential to become a significant pest of fruit and vegetable crops in this country. Beans, including soybeans, are especially at risk. It may also feed on the fruit of tomatoes and other vegetables. It damages the fruit of peaches, apricots, Asian pears, apples, grapes and raspberries. Fruits, and sometimes foliage, of a wide assortment of ornamental plants could serve as population reservoirs.

These stink bugs differ from other species in that they are also troublesome nuisance pests which overwinter in buildings. As the weather starts to cool in the fall in about mid-September, adults congregate in large numbers on exterior surfaces of structures and enter through cracks and voids. Many die over the winter, but the surviving individuals begin to emerge as the weather warms in the spring, in April through June. At that time, numbers are relatively low, but adults can be found on honeysuckle, serviceberry, and other plants which form fruit early in the year.

These insects feed for a time, then mate. Females lay whitish eggs in masses of about 28 on a variety of host plants, starting in mid-June to the beginning of July. Egg-laying continues through August, and a few masses can still be found in September. A single female can lay up to 400 eggs within her lifetime. Eggs hatch in about one week, and the nymphs pass through five stages, each lasting about a week, before molting into adults. As fruit on favored plants matures and dries up, adults migrate to other plants with ripening fruit. Toward the end of the summer, as populations became quite large, these stink bugs can be found on a vast variety of plant species. Feeding damage on leaves is marked by star-shaped lesions which may later coalesce and turn brown. Beans are damaged within pods, and bean pods may fail to develop properly. Tree fruit is marked by lesions on the surface and under the skin. Damage early in the season results in "cat facing" damage. Crops can be damaged suddenly as fruit ripens and becomes attractive to these highly mobile insects.

We know that there are large established populations of this stink bug in Lehigh, Northampton, Bucks, Berks, Cumberland, Lebanon, and Dauphin Counties in Pennsylvania. They are also in the Hagerstown, Maryland area. Individuals of this bug have been found in several counties in New Jersey and northern

Pennsylvania. We are interested in knowing if it is being found in other areas of the state, and if it is causing economic damage to any commercial operations.

Adults are approximately 7/10-inch long and are shades of brown on both the upper and lower body surfaces. They are the typical "shield" shape of other stink bugs, almost as wide as they are long. To distinguish them from other species of stink bugs, look for lighter bands on the antennae and darker bands on the membranous, overlapping part at the rear of the front pair of wings. They have patches of coppery or bluish-metallic colored punctures on the underside of the head and "shoulders." When squashed or disturbed they emit a penetrating "spicy" type odor.

There are five nymphal, or immature stages. The first is 1/10-inch long and remains in a group on the hatched egg mass. The remaining four increase in size until the fifth instar, which grows to about 1/2-inch in length. The abdomen is a yellowish-red in the first instar and progresses to off-white with black spots and reddish markings. The legs, head and thorax are black. Spines are located before each eye, and on the margins of the thorax.

New adults start appearing toward the end of July. There is probably only one generation per year in Pennsylvania.

Researchers at Rutgers University are studying the biology of these insects and testing pesticides for controlling them on fruits and vegetables. In the bugs' native range, pyrethroid insecticides have been effective, but the large numbers and mobility of these insects later in the season can complicate control efforts.

If you think you having a problem with these insects in your commercial operation, or you are seeing them outside of the areas listed, please collect some specimens and contact Karen Bernhard at Lehigh County Cooperative Extension at (610) 391-9840 or e-mail < kmb13@psu.edu >.

[Back to top](#)

---

## **The Organic Way- How Nutrient Flow Affects Soil and Plant Health**

Elsa Sanchez, Assistant Professor of Horticultural Systems Management

Organic growers manage soils for long-term soil and plant health. It is often recommended that soils, compost and manures be regularly tested to determine nutrient availability, soil pH, cation exchange capacity, base saturation and/or percent organic matter. This is recommended so that management decisions for improving soil and plant health can be made taking these factors into account. Soil testing is an important tool for managing nutrient flow and long term soil and plant health.

Nutrient flow is the movement of nutrients from one place to another. In farming systems nutrients either move into or out of the system. For example, applying compost to a field causes nutrients to flow into the system and harvesting crops cause nutrients to flow out of the system. There are three basic scenarios for nutrient flow. In the first scenario more nutrients flow *out* of the system than *into* the system. Nutrients used by crops are not fully replaced by inputs like compost, manures and green manures. In the short term successful crop production can be accomplished with this type of nutrient flow, but over the long term nutrients will be less available and soil health, yields and quality will suffer. In the second scenario more nutrients flow *into* the system than *out* of the system. This can be the case in systems where composts, manures and green manures are applied supplying nutrients beyond crop needs. Over time the system will contain an excess of nutrients or nutrient imbalances. Again, in the short-term successful

crop production can be accomplished, but this also can lead to long-term problems including salt build-up, poor soil structure and low yields and quality. In the final scenario the amount of nutrients flowing *out* of the system is about equal to the amount flowing *into* the system. This is the best scenario for long-term soil and plant health and the goal for organic farms. Managing nutrient inputs can be challenging on organic farms because composts, manures and green manures have variable amounts of nutrients and release nutrients over a long period of time. Regular soil and compost testing provides a simple way to keep nutrient flow balanced.

References:

Magdoff, F. and van Es, H. 2000. Building Soils for Better Crops 2nd Edition. Sustainable Agriculture Network Handbook Series Book 4.

Howell, J. 2004. *Interpreting Soil Test Results and Estimating Nutrient Availability* In: Organic Vegetable Production. NRAES – 165.

Please mail or email ideas for future column topics or thoughts on organic production to Elsa Sánchez, Department of Horticulture, Penn State University, University Park, PA 16802 or [elsa-sanchez@psu.edu](mailto:elsa-sanchez@psu.edu).

[Back to top](#)

---

## **That's a Berry Good Question!!!**

Kathy Demchak, Small Fruits Specialist, Department of Horticulture

**Q.** . I have more purslane in my strawberry fields this year than I can recall ever seeing before. Why is purslane such a problem this year? (Stuart Constable, Highland Orchards, Inc.)

**A.** Stuart was the third person to ask me for an explanation about the purslane plant population this year. Purslane is generally present early in the season, but is often easier to control once the soil dries out. Here are some interesting facts that explain why producers are having purslane problems this year.

First, purslane is a prolific producer of seeds - research results showed that a single plant can produce 250,000 seeds. Second, purslane seeds can survive up to 40 years in the soil, just waiting for the right conditions (i.e., moisture) for germination. Third, if purslane is hoed or rototilled, and moisture is adequate, purslane plants can survive and re-root, and even chopped-off purslane parts can form roots and become new plants. One Michigan publication referred to rototilling purslane under moist conditions as "purslane multiplication". As we all know, even July and August which are normally relatively dry months, were wet this year, allowing plants to re-root and seeds to germinate the entire season. One top of all this, I'm also certain that the high amounts of rain probably caused any pre-emergent herbicides to wash below the germination zone (the top 1/2 inch of soil), so their effectiveness was probably fleeting.

So, what can you do to help the situation? Even though rototilling and hoeing might not kill the plants that are there, and stems may root, rototilled or hoed plants produce fewer seeds than those that haven't been touched, so that process is still a help in the long run. In strawberries, Dacthal, Devrinol, and Sinbar are effective against purslane, but at this time of the year (early September), Sinbar is labeled to be used only in new strawberry fields, and Devrinol should only be used if a sufficient number of daughter plants have rooted, as it inhibits root growth.

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](mailto:kdemchak@psu.edu). You will be credited with the question, or can remain anonymous, as you wish.

[Back to top](#)

---

## **PA Berry Producer Statistics from the Census of Agriculture**

Kathy Demchak, Department of Horticulture

Results of the 2002 Census of Agriculture were released from the National Agricultural Statistics Service this summer. There's a lot of really interesting information in the results. Anyone with Web access can browse the results at <http://www.nass.usda.gov/census/>. There's a lot of information on national production, state-by-state production, and county-by-county production for just about any crop.

In the area of berry production in PA, there were 1155 farms producing berries in PA in 2002, down from 1250 in 1997 (a 7.6% drop). However, the berry production acreage went up from 2208 acres in 1997 to 2395 acres in 2002, an 8.5% increase. Nationwide, the number of farms producing berries dropped 6.0% from 1997 to 2002, with a 3.8% increase in acreage. The number of farms with harvested cropland in general decreased 11.8%, and acres of harvested cropland decreased 5.1%.

Within PA, the number of strawberry producers didn't decrease as much as in many other states, which now leaves us with the distinction of having more farms (685) producing strawberries than any other state, even California (they had 684!). We're a distant 6th in acreage, however. Number of blueberry producers and acreage held steady. The big increase for PA was in bramble production, with number of producers of raspberries increasing from 299 in 1997 to 373 in 2002, and acreage more than doubling from 217 acres in 1997 to 497 acres in 2002. An even more impressive trend was apparent with blackberries, though numbers were smaller. In 1997, 69 farms produced blackberries on 15 acres (guess they were just testing the water...), increasing to 127 farms in 2002 producing blackberries on 92 acres.

Our big strawberry producing counties are (in order based on number of acres) Lancaster, York, Cumberland, and Erie. Counties with the most raspberries are Westmoreland, Allegheny, York, and Indiana, with Washington leading in blackberry acreage. Bradford and Erie Counties had the greatest acreages in blueberries.

[Back to top](#)

---

## **Potato Musings**

Bill Lamont, Department of Horticulture

### **Figuring Your Potato Yields**

Bill Lamont, Department of Horticulture

Dig 10 feet of row per sample. Collect at least 5 samples per field. Add up the total pounds dug and divide by the number of samples collected. Refer to the following table to calculate yield. (Use the average sample weight).

<b>Weight in lbs of 10 feet of</b>	<b>CWT per Acre</b>	<b>Weight in lbs of 10 feet of row</b>	<b>CWT per Acre</b>
--	-------------------------	--	---------------------

**row**

10	153.7	21	322.8
11	169.1	22	338.1
12	184.4	23	353.2
13	199.8	24	368.9
14	215.2	25	384.3
15	230.6	26	399.6
16	245.9	27	415.0
17	261.3	28	430.4
18	276.3	29	445.7
19	292.0	30	461.1
20	307.4		

[Back to top](#)

---

## **Upcoming Meetings**

Bill Lamont, Department of Horticulture

### **Local**

September 13, 2004. High Tunnel Research and Education Facility Grower's Field Day, High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA. Contact: Lisa White (814) 692-4635 or e-mail: [ldw112@psu.edu](mailto:ldw112@psu.edu).

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 [sandcmoore@juno.com](mailto:sandcmoore@juno.com)

September 28, 2004, 9:00 a.m. - 2 p.m., Grower Meeting on High Tunnel Production. Northampton County 911 Center, Nazareth, PA. Contact: Emelie Swackhamer (610) 391-9840 or (610) 746-1970.

Nov 3 and 4, 2004. 2004 Mid-Atlantic Vegetable Workers, Howard Johnson's in Newark, DE. Contact Joanne Whalen at [jwhalen@UDel.Edu](mailto:jwhalen@UDel.Edu).

**Regional**

**National**

**International**

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.c](mailto:jennis@agr.gc.c)

[Back to top](#)