

THE VEGETABLE GAZETTE

November, 1999
Volume 3, No. 11

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Saying for the Month: "Happy Thanksgiving "

Comments from the Editor

Bill Lamont, Department of Horticulture

The month of November is a time when the all the beautiful fall foliage that we experienced last month become leaves to rake and also a source of new compost for next years garden. This month the last of the cabbage, broccoli and cauliflower and other hardy vegetables fill the markets and auction houses. Growers are cleaning up and preparing their ground for next year by planting a cover crop on it. It is a very busy time of year as growers rush to finish their field work before the winter weather sets in for good and some serious deer hunting begins. I like to smell the Thanksgiving turkey cooking and all the fixings, which includes a hardy portion of vegetables!!

As always, the Vegetable Gazette Team encourages your feedback so that we can better serve your needs and address your concerns. Be sure to check the educational opportunities listed in the upcoming meetings at the end of the gazette.

Reminder of In-Service Educational Training Opportunities

Bill Lamont, Department of Horticulture

Just a heads-up on two in-service educational training opportunities to mark on your calendars. The first the Horticulture Agents/Specialists Vegetable/Small Fruits Roundtable which will be held November 23, 1999 from 9 AM-3 PM in Room 10 Tyson Building. This is the opportunity for horticulture agents and extension

specialists from Horticulture, Entomology and Plant Pathology working with vegetables and small fruits to exchange observations and thoughts on the recently completed growing season. Updates on results of on-farm tests and research projects conducted by county extension staff and extension specialists will be presented. Planning and coordination of next year's activities will be an important part of the roundtable. There will be pizza for lunch.

The second training session will be on the Operation and Use of High Tunnels which will be offered on April 12, 2000 from 8:30 AM-5 PM at the Horticulture Research Farm at Rock Springs. The training will be conducted at the "High Tunnel Research Facility" and will cover all phases of production in a high tunnel and provide agents with "hands-on" experience in specific phases of the operation of a high tunnel. Topics to be covered include: what crops, determining planting dates, planting techniques, water management considerations, fertility management, importance of proper ventilation, controlling insects and diseases and opportunities for multiple cropping. Mark both of these training sessions on your calendars now.

Update on the High Tunnel Project

Bill Lamont, Department of Horticulture

All 24 tunnels are covered and last of end-walls being erected this week. The tomatoes in the first eight tunnels have reach maximum size and should be turning shortly, if we get some more sunny days. The lightweight, thermal blanket has worked very well, although we did see some injury on tomatoes that were exposed on the front and sides of the cover. For those that know the valley where the Horticulture Research Farm is located know that is can be quite cold and to have tomatoes still in production on November 2nd is quite a accomplishment.

We will be gearing up for the very intensive, around the clock, monitoring of environmental conditions (soil and air temperatures at different levels and locations inside the tunnels; relative humidity at different levels; wind speed and direction both outside and inside the tunnels; measurement of the temperature and carbon dioxide levels of the thermal plumes resulting from the planting holes in the soil applied plastic mulch; light measurements both quantity and quality; soil moisture at different levels and fertilizer movement in the applied water stream.

We are really excited about the tremendous interest in this project and already have some of our colleagues in the department have planted cut flowers on raised beds in one tunnel this fall. We used the small plastic mulch and drip irrigation applicator that we have developed for use in the high tunnels and for large home gardens or smaller market gardeners. We made 4 rows that were 3-4 inches high and 18 inches wide. We expect to use the unit even more this spring. Will keep you posted on development with the high tunnels in future issues.

Insect Pest of the Month--Tarnished plant bug

Shelby Fleischer, Department of Entomology

Plant bugs are a large, diverse family of insects that typically feed on plant parts with high rates of cell division, including buds and flowers. They feed by sucking sap from plants. They are believed to inject a toxic substance (possibly digestive enzymes) into the plant when feeding to break down plant tissues. Due to their feeding preference on buds, flowers, young developing fruit, or plant terminals, these bugs can cause economically important damage at relatively low densities. The time of feeding strongly influences the plants response. There are typically one of five symptoms: (1) abortion of young fruit or buds, (2) deformation of fruit, (3) necrosis near the site of feeding, (4) damage to seeds, or (5) reduced or deformed vegetative growth including tip die-back (when an apical bud or very young stem is the feeding site). On a plant like cauliflower, a bronzing on the head results from feeding on many individual flower buds.

The tarnished plant bug is an important example of this group that can be a pest of vegetables and small fruit. Adults are bronze to dark brown fragile-looking insects, about 1/4 inch long, with white marks or lines behind the head and sometimes along the front wing. They are about 1/4 inch long, and oval in shape. The back half of the front wing is membranous and held at a downward angle. The hind wing is membranous, and not visible unless the insect is flying, or you pull back the front wing. Plant bugs have piercing-sucking mouthparts. The beak is three- or four-segmented, arises on the front of the head, and is held below the body and between the legs when not in use. Antennae are usually long and four- or five-segmented. Compound eyes are normally large. Nymphs (the immature stage) are typically green, although younger nymphs can be yellowish. Black spots are visible on the back of older nymphs. Nymphs do not have wings.

The tarnished plant bug is somewhat unique among plant bugs, in that it has an exceptionally wide host range. It has been recorded from 385 plants, including 130 economically important species. Examples include asparagus, celery, strawberries, cauliflower and broccoli, potatoes, beans, alfalfa (especially when it begins to flower), peaches, carrot, nursery stock and many species used as cut flowers. Its natural habitat is among species that are early colonizers, such as meadows and weedy patches that are let go to flower. The tarnished plant bug will typically begin to colonize these weeds when the plants begin to flower, populations will build while flowers are abundant, and populations will decline as the plant senesce. Examples of good hosts for tarnished plant bug are aster-like flowers, from daisy fleabane in the spring to ragweed, goldenrod, and horsetail later in the year. Other common flowers inhabited by tarnished plant bug include curly dock, cutleaf evening primrose, wild carrot, vetch, and clover. It is common to find populations much higher in those areas than in the crops themselves. Use a sweep net to detect the tarnished plant bug in these flowering weeds. A sweep net is also useful in the crops where the crop is not damaged by the sweeping. Otherwise, direct examination of the crop, including opening up plants to look in crevasses, etc., is necessary. White sticky traps will also catch tarnished plant bug adults.

The tarnished plant bug overwinters as an adult. It is active as soon as the weather is warm. Eggs are laid inside of plant tissue, in buds, soft, young stem tissue, or leaf veins. Eggs hatch in about 5 to 7 days. There are five nymphal instars. Development occurs as long as temperatures exceed about 50 F (10.5 C). Development slows or stops when temperatures exceed 94 F (34 C). As with all bugs, the life cycle involves just eggs, nymphs, and adults (there is no pupal stage, and no complex metamorphosis, thus the

nymphs and adults tend to feed on the same material). It takes the tarnished plant bug as long 40 days (at 53 F, or 12 C), and as short as 12.5 days (at 93 F, or 34 C), to progress through the five nymphal instars. New adults begin to lay eggs in about 4 to 8 days, and will lay about 1 to 3 eggs per day and about 30 to 120 eggs per female over her lifespan. The sex ratio of new adults is 1:1, but the sex ratio in a new patch of flowering weeds often includes more females at first, and then shifts towards a 1:1 sex ratio.

Weed management influences tarnished plant bug management. Preventing weeds from forming young buds and flowers will keep populations lower in the weedy areas. Once weeds flower and the tarnish plant bugs colonize them, the bugs will tend to remain in the weeds unless the weeds start to senesce, dry, or are mowed. There are biocontrols that are being investigated to help reduce populations in these weedy areas, or along roadsides. Once the adults move into a crop, the type of management depends on the crop growth stage. When plants are vegetative, low densities can be tolerated. As plant begin to set buds, chemical controls may be needed. However, chemicals will have no effect on the egg stage inside of the plant tissue.

\$258,000 Per Acre

Eric Vorodi, Extension Agent

Sound like a lot? You bet it is and no it's not realistic. However, you probably did see several very large pumpkins sold at auction the last two years and they can bring a pile of money. A 600 pounder brought about \$600 at auction in Shippensburg this year and a slightly smaller one brought \$300. If it took even as much as 1000 sq.ft per plant that nets out to \$25,800 per acre. At 100 sq.ft per plant you're up to \$258,000 per acre! On the retail side, these same pumpkins have been sold for as much as \$1000.

This just reinforces the idea that the vegetable game is 50% growing and 50% marketing. There are a few people out there who understand that somewhere, somebody has \$1000 to spend on a pumpkin and is ready and willing to do it. Question is, will you be the one marketing the pumpkin to them?

Giant pumpkins take extra space and extra care but could put extra cash in your pocket. They also could be a good project for one of the kids to take on. Several varieties are marketed to the monster pumpkin grower. Most common are Dill's Atlantic Giant and Prizewinner. Both are available through Johnny's Selected Seeds and other catalogs. The current world record stands at over 1000 pounds. Maybe you can beat it next year. (Eric is a person after my own heart-Bill Lamont, Editor)

The Importance of Controlling Weeds

Joe Ingerson-Mahar, Vegetable IPM Coordinator, Rutgers Cooperative Extension

In vegetable production, weed control is less of a concern than disease and insect control. Nevertheless, controlling weeds is essential for a successful pest management program. There are zero tolerance weeds for each crop that seriously compete with crops or interfere with harvests and should not become established. New, invading species should also be removed before they become established.

Besides competing for water, space, sunlight and nutrients, weeds often serve as hosts for a variety of pests, as the following examples illustrate. A study conducted at Ohio State University and reported in the *Kentucky Pest News*, August 30, 1999, emphasizes the need to manage all pests in a cropping system. Researchers at Ohio State were looking at **the transmission of plant viruses by aphids in pumpkins**. They first identified eight aphid species present and rated their ability to vector viral diseases including watermelon mosaic, the most prevalent disease in the study.

The researchers found several annual and perennial weeds in and around the fields acting as reservoirs for diseases, including shepherds purse, Virginia pepperweed, field bindweed, dandelion, purple deadnettle, and goldenrod. Winged aphids carried the viral disease from the weeds to the pumpkins. There are no control measures that directly affect viral diseases so the diseases must be managed by reducing the aphid and weed populations.

Recently, I found an association between damaging carrot beetles and common ragweed in sweet potatoes. Carrot beetles are 1/2 to 3/4 inch long scarab beetles (similar to May beetles) that are pests of the roots of several crops. In sweet potato fields, these beetles are attracted to and feed on the roots of large, common ragweed plants, one of the more common weeds in the fields. They also feed on the potato roots that are in close proximity to the ragweed, using large, shallow excavations on the potatoes. Potato roots nine inches or more away from the ragweed plant are undamaged. These beetles do not occur on lambsquarter, pigweed, or other weeds. Remove the ragweed and presumably the carrot beetle damage should also be removed.

Other examples of weed-pest interactions can be given, such as plant parasitic nematodes and weeds, and soil-borne diseases and weeds. Now is the time of year to produce a final weed map. Farmers can map their fields indicating where perennial weeds and other noxious or problem weeds occur to develop management strategies for next year. Controlling weeds is an important component of a successful pest management program.

The Potato Section

Bill Lamont, Department of Horticulture

Potato Musings

All the potatoes are in the storage and we should be washing and grading next week. We will share the results in future newsletter. I think that we should be zeroing in on about 10-15 varieties in future trials. These can be round whites and reds for the tablestock market and some varieties for the chipping industry as well as a few interesting specialty potatoes for the retail markets. I will be working with my colleagues here on campus and the agents to decide which varieties to trial next year and where.

Start the New Millennium at the 2000 Mid-Atlantic Fruit and Vegetable Convention
Bill Troxell, Pennsylvania Vegetable Growers Association

There is no better place for fruit and vegetable growers in Pennsylvania to start the new millennium than at the 2000 Mid-Atlantic Fruit and Vegetable Convention in Hershey on January 25 - 27, 2000.

Over 1,800 persons, mostly fruit and vegetable growers, from throughout Pennsylvania, Maryland, New Jersey and other states are expected to gather at the Hershey Lodge and Convention Center for the Convention on January 25 to 27th. The event is jointly sponsored by the State Horticultural Association of Pennsylvania, the Pennsylvania Vegetable Growers Association, the Maryland State Horticultural Society and the New Jersey State Horticulture Society.

The Great American Hall at the Hershey Lodge and Convention Center will host the Trade Show with over 130 exhibitors. Five and sometimes six concurrent educational sessions will be offered on all three days of the Convention.

On the first day of the Convention, sessions on Tree Fruit, Sweet Corn, Basics of Vegetable Production, Greenhouse Vegetables, Potatoes, Season Extension Technology, Mulches, Labor/Regulatory Issues, Cole Crops and Sustainable Growing will be offered. Sessions on the second day will focus on Stone Fruit, Direct Marketing, Strawberry Plasticulture, Processing Crops, Peppers, Bedding Plants, Perennials, Irrigation, Alternative Tillage and Fumigation/Pesticide Application. The last day will feature Tree Fruit, Tomatoes, Vine Crops, Small Fruit, Cut Flowers, and Value-Added Vegetables sessions.

A special hands-on Computer Workshop will be conducted throughout the first two days of the Convention. Growers will be able to see first-hand demonstrations of agricultural software programs and the use of the Internet.

Many pesticide applicator update training credits are available to growers attending the sessions. The program covers nearly every aspect of fruit, vegetable and berry production. Commercial growers should not pass up this terrific educational opportunity.

The processing tomato growers with the highest yields for the 1999 season will be honored at the annual Tomato Awards Luncheon on the opening day, January 25. That evening, Pennsylvania fruit and vegetable growers will be treated to a reception hosted by the Pennsylvania Department of Agriculture and the Pennsylvania Food Merchants Association. The annual Fruit and Vegetable Growers Banquet will follow with recognitions and entertainment.

For more information on the fruit program and registration, contact Maureen Irvin, State Horticultural Association of Pennsylvania - 717-677-4184.

For more information on the vegetable program and registration, contact William Troxell, Pennsylvania Vegetable Growers Association - 717-694-3596.

Persons registered for either the fruit or vegetable program can attend all the sessions offered (fruit, vegetable and small fruit sessions) plus the trade show. Registration either through the mail or at the door is required to attend both the trade show and educational sessions.

Special Note to All County Extension Offices

Bill Troxell, Pennsylvania Vegetable Growers Association

As we have in the past, Advance Copies of the Program will be prepared for you to mail to your fruit, vegetable, small fruit and flower growers. Please contact William Troxell at the Pennsylvania Vegetable Growers Association with a count of how many copies of these Advance Programs you will need.

E-mail: wt.pvga@tricountyi>net

Telephone and fax: 717-694-3596

Address: PVGA, RR 1 Box 947, Richfield, PA 17086

Upcoming Meetings

Bill Lamont, Department of Horticulture

Local

Regional

December 14-16, 1999: New England Vegetable and Berry Conference, Sturbridge Host Hotel, Sturbridge, MA. Contact: Vern Grubinger 802-257-7967.

January 18-20, 2000: New Jersey Vegetable Growers Association Meeting and Trade Show, Taj Mahal, Atlantic City, NJ. Contact: Phil Traino at 609-985-4382.

January 25-27, 2000: Mid-Atlantic Fruit and Vegetable Growers Convention, Hershey, PA. Contact: Bill Troxell (717) 694-3596.

National

September 23-26, 2000: 15th International Agricultural Plastics Congress and the 29th National Agricultural Plastics Congress, Hershey, PA. Contact: Pat Heuser, Executive Secretary, American Society for Plasticulture (814) 238-7045.