

The Vegetable and Small Fruit Gazette

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Horticulture Department
The Pennsylvania State University

In this Issue:

Comments from the Editor
Schedule for Agent Articles
Introduction to Elsa Sanchez
Start Now for Insect and Disease Management in Vegetable Transplants
Vegetable Varieties
Bug vs. Bug- Biological Control of Western Flower Thrips
That's a Berry Good Question!!!
Gutition and Imidan Changes for Small Fruit
Western Pennsylvania Vegetable Growers Seminar
Potato Musings
Potato Program at the Mid-Atlantic Fruit and Vegetable Meeting in January
Upcoming Meetings

Tip for the Month: "Happiness is like potato salad- when you share it with other, it's a picnic."

-Unknown

Comments from the Editor

Bill Lamont, Department of Horticulture

Happy New Year and welcome to the first issue of the Vegetable and Small Fruit Gazette for 2002. We wish each of you a healthy, prosperous, and productive year ahead. The next few months are full of educational meetings and I would refer you the listing of upcoming meetings at the end of the gazette. I want to thank Tim Elkner starting us off in grand fashion and setting the standard for next year with his excellent article "Start Now for Insect and Disease Management in Vegetable Transplants". As I have said in the past, I really appreciate the level of agent participation in supplying articles for the Veg. & Small Fruit Gazette. We have Emelie on deck for February. It gives me great pleasure to welcome and introduce another new faculty member Dr. Elsa Sanchez, our new Systems Management Horticulturist to the Horticulture Department. Elsa will certainly be a real asset to the horticulture production team and I

am sure a frequent contributor to this publication. Elsa has written a brief article of introduction in this issue. As always, the Vegetable and Small Fruit Gazette Team encourages your feedback so that we can better serve your needs and address your concerns.

Schedule for Agent Articles

Bill Lamont, Department of Horticulture

February	Emelie Swackhammer
March	George Perry and Steve Bogash
April	Greg Burns
May	Tom Butzler
June	Laura McNutt
July	Steve Bogash
August	Mary Conklin
September	Eric Oesterling
October	Cheryl Bjornson
November	John Esslinger
December	Andy Muza

Introduction to Elsa Sanchez

Elsa Sanchez, Assistant Professor of Consumer Horticulture

Greetings! I'm Elsa Sánchez, the new Systems Management Horticulturist in the Department of Horticulture at Penn State University. My appointment is 60% Extension and 40% Teaching. The primary focus of my position is on development of horticultural crop production systems for smaller acreage or part-time producers. I will be developing programs concerning alternative or niche crops, production and management systems for small or part-time producers and integrated crop management.

I came to Penn State by way of Washington State University, where I earned a Ph.D. in Horticulture, and New Mexico State University, where I earned a M.S. in Agricultural Biology and a B.S. in Horticulture. I look forward to addressing some of the needs of the growers that farm smaller acreage's of horticultural crops or farm part-time and welcome your suggestions on projects/needs that you would like to see addressed.

My office is located in the Department of Horticulture, Room 202, Tyson Building and my phone number is (814) 863-2433 or you can reach me via my e-mail at ess11@psu.edu.

New Website for the Center for Plasticulture

Bill Lamont, Department of Horticulture

The new website address for the Center for Plasticulture here at Penn State is <http://plasticulture.cas.psu.edu> The Center for Plasticulture is a clearing house for research and education on all aspects of the application of plastics in agricultural production systems. We intend to keep it current and updated with the latest research results and educational materials available here at Penn State and also from other institutions and commercial companies.

Start Now for Insect and Disease Management in Vegetable Transplants

Tim Elkner, Extension Agent, Lancaster County

Pest management for vegetable transplant production is an integrated process and includes sanitation, sound cultural practices, the use of resistant cultivars (where possible) and finally, proper use of the correct pesticide. Your pest management program should be starting now in the greenhouse. Begin the season with a clean, weed-free disinfected greenhouse. This means clearing the growing area of any plant debris, weeds and any discarded flats or tools. After clean-up, wash and disinfect empty benches, potting areas, storage shelves, tools and leftover cell packs and flats that you plan to reuse. Your disinfecting solution can contain any of the sanitizing products such as Green-Shield, Physan 20, Triathlon, Zero Tol or chlorine bleach (10% solution). Be sure to follow the manufacturer's directions when using any commercially prepared materials. If you are using a 1 to 9 bleach solution, remember that it requires a 30-minute soak in order to be effective. Also - while chlorine bleach is an effective sanitizer, please note that there will be a 50% reduction in strength of a chlorine solution after just two hours. Therefore, you should prepare a new solution each time you plan to sanitize. This includes a new solution after lunch if you started working in the morning!

Once you have the growing area and equipment sanitized, be sure to avoid recontamination. Dirty hose nozzles or tools can contaminate potting soil and the

general growing area. Be sure that everything brought into the area is clean! The floor or soil in the growing area is a good source of insects and diseases. Do not stand on the benches after they have been cleaned as you can easily move diseases up from the floor on your shoes. Use hooks to keep your hose nozzle off the floor. Ideally, grow your transplants off the floor as well, either on benches or pallets. The floor in your greenhouse should be well drained and cleaned before plants are started there. Some growers have taken to covering the entire floor with black fiber cloth to both prevent weed growth and make clean up easier after transplant production. Once dry, plant and soil residues are easily swept-up and removed.

Does your growing area have good air movement? Circulating air not only distributes heat more evenly but can also reduce condensation in the greenhouse. Consider installing a horizontal air flow (HAF) system in your transplant production area.

I've heard growers ask if allowing the greenhouse to 'freeze' for several days in cold weather means that insect pests will be killed. No, according to Alan Michael, our regional ornamental specialist. Heat is much more effective for pest destruction. For example, heat has been shown to be more effective for the control of thrips, according to Leanne Pundt of the University of Connecticut. In one study, high temperature (104°F) combined with very low humidity (less than 10%) for three to four days killed most adult thrips. However, your greenhouse must be completely weed-free for this method to work. If you have constant thrips problems, this control method might be something to try this summer.

Finally, always use disease-free media for transplant production. If using soil, be sure it is pasteurized before you bring it into the growing area. Successful soil pasteurization requires 30 minutes at 180°F. Be sure to frequently sanitize and maintain clean areas where soil is mixed and pots are filled.

Ideally, you will have separate areas if you are producing both vegetable transplants and ornamentals. Bringing cuttings of flowering plants into the vegetable area can introduce pests such as thrips and diseases such as tobacco spotted wilt virus (TSWV). Look at your available space(s) and plan accordingly.

Take some time to prepare your vegetable transplant greenhouse now to reduce disease and insect problems later this season. Waiting until seeding time to start this chore may not leave enough time to do the job thoroughly. This could result in a great deal of time and money spent later to control a disease or insect infestation.

Vegetable Varieties

Mike Orzolek, Department of Horticulture

Every year there are several 100 new vegetable varieties that are released by seed companies because of their improved pest resistance, greater marketable yields,

improved quality and taste, and unique or value-added characteristics. The problem for most growers is what current variety do I drop and which new variety should I try. There are several recommendations I would like to make regarding that subject.

1. Always try small seed amounts or areas of field production of new varieties and always include some of your current standard variety for that vegetable crop.
2. Look at all the characteristics of the new variety your considering compared to the older variety your considering dropping including: maturity, pest resistance, marketable yield, market quality, appearance, and packaging options.
3. Always check seed packets for germination rates and keep accurate records on field performance over time.
4. Consider availability: will that new variety be available?, is there purchase restrictions on the variety because of seed production limitations?, how is the seed being sold, by the unit, or by weight?
5. Since your trying a new variety for the first time, don't purchase more seed than you plan to utilize for that particular year. Storing extra or unused seed from year to year will affect both seed germination rates and seed vigor.
6. Generally, new hybrid vegetable varieties will out perform the older open-pollinated vegetable varieties, but the seed will cost more.

Order your new vegetable varieties early (before February 1) since seed companies and/or seed brokers may have limited inventory of the new varieties. Because a new variety will produce a higher marketable yield compared to the current variety you are growing, it does not mean that the newer variety will have the same consumer preference as the older variety. Before changing varieties, is there a market demand to change to a new variety. Marketing should be considered as a high priority when decisions are made on new varieties or variety displacement.

Bug vs. Bug - Biological Control of Western Flower Thrips

Cathy Thomas, Integrated Pest Management Program
Pennsylvania Department of Agriculture

There are many species of thrips that can attack greenhouse and nursery crops, however Western Flower Thrips (*Frankliniella occidentalis*) is the most serious due to their ability to transmit the major viruses, Impatiens Necrotic Spot Virus (INSV) and several strains of Tomato Spotted Wilt Virus (TSWV). Western flower thrips have a broad host range and may feed upon impatiens, fuchsia, chrysanthemum, ivy geraniums, verbena, petunia, cyclamen, primula and many other ornamental hosts.

Early detection and treatment of this pest is critical to minimize virus transmission. Damage symptoms or virus infection may not be visible until many days after plants have been fed upon. Greenhouse vegetable seedlings and transplants should be isolated from ornamental plants.

Damage

Western flower thrips feed on leaves, flowers and buds of many plants. As damaged leaves, and flowers grow they appear deformed, streaked, or have a silvery appearance. Black specks of excrement may also be evident where thrips have fed.

Western flower thrips spread Impatiens Necrotic Spot Virus and Tomato Spotted Wilt Virus. The virus is acquired by thrips larvae (first instar) when they feed on infected plants and adult thrips transmit the virus to healthy plants. There is no treatment for this virus once the plant is infected. Virus symptoms may include ringspots, vein necrosis, mottling, or mosaic patterns. Vegetable plant yields are reduced and fruit may be unmarketable. If you suspect that a plant has a virus, have it tested through a laboratory or use an on-site diagnostic kit. If INSV/TSWV is detected, rogue infected plant material and destroy to prevent further spread of the virus.

Life cycle

Adult thrips are narrow, ~ 1.3mm. long, yellowish with a brownish black abdomen. The wing margins have fringes, and the abdomen is pointed at the end. These characters can be seen on a sticky card using at least a 10x hand lens. Females insert eggs into leaves and buds. Eggs hatch into larvae that are yellow. After two larval stages, a prepupa develops followed by the pupal stage and finally the adult. Prepupa and pupal stages are usually found in growing media or other debris, however, they can be found on the plant in protected areas on foliage and flowers. Only adults and larvae feed on plants. The entire life cycle from egg to adult takes approximately 12 days at 86° F.

Monitoring and Sanitation

Early detection is critical for thrips control. Examine plants once a week for feeding damage and use blue or yellow sticky cards to detect winged adults. Blue sticky traps are more attractive to western flower thrips. Place one trap/1,000 square feet of growing space and hang traps near doors and vents. Check traps once a week and record. Before starting vegetable seedlings, monitor growing area with sticky cards to detect lingering thrips from previous season.

Eliminate sources of thrips by having good sanitation before and during the crop cycle. Remove weeds and all plant debris inside the production area and have at least a 20 foot weed free barrier around the greenhouse. Weeds can harbor both the thrips (and other pests) and the virus. Ongoing problems with INSV are often the result of poor sanitation.

An effective method for detecting thrips on plants is by tapping or shaking flowers and leaves over a white sheet of paper. This method may dislodge the dark colored adults and the yellow larvae.

Biological Controls

There are many natural enemies of western flower thrips, however controlling thrips

biologically often requires integration with compatible pesticides for effective control. Virus indicator plants should be deployed in vegetable production if there is a history of the disease in the greenhouse range. Indicator plants (susceptible varieties of plants) provide an early warning for locating thrips. Certain petunia varieties are very effective (Carpet Blue, Blue Madness) in detecting thrips and INSV. Petunias attract thrips and may show symptoms of virus infection, however the petunias do not become a reservoir for the virus. Virus symptoms appear as small brown to black spots. Infected petunia leaves can be removed and the plant can be used for further detection throughout the season.

These biocontrols are commercially available from most biocontrol suppliers.

Neoseiulus (Amblyseius) cucumeris

Neoseiulus cucumeris is a predaceous mite that attacks thrips larvae and eggs on foliage and flowers. High numbers are needed for effective control. Mites are distributed loosely or in sachets (small envelopes). These sachets may provide several generations of predatory mites over a six week period.

Hypoaspis miles

Hypoaspis miles is a predatory soil mite that feeds on thrips pupae in growing media. Researchers report thrips reductions by 30 to 60 %. This mite should be used in conjunction with a natural enemy that feeds on thrips stages found on plants. This natural enemy is also effective in reducing fungus gnat larvae.

Orious insidiosus

Orious insidiosus is a minute pirate bug that feeds on all thrips life stages. It will also attack aphids, mites and caterpillars. They reproduce best at high humidity and during long days.

Beauveria bassiana - (Mycoinsecticide)

A fungal strain that is pathogenic to insects. Spores must have direct contact with insect to be effective. As spores attach to the insect cuticle, they germinate and the fungus infects body cavity. Two products commercially available are Naturalis T& O% and Botanigard ES%.

This fungus should be used as a preventive and not as a "rescue treatment". Successive treatments may be required for control. It will not control heavy populations of insects and it takes 7 - 10 days before there is evidence of control.

Please phone or email me if there are specific issues you would like me address in this column.

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That's a Berry Good Question

Kathy Demchak, Department of Horticulture

This one's a two-fer, with both questions from Boots Hetherington of B&R Farms. Other growers had also been concerned about the second question.

Q1. My strawberry plants turned a very bright red this fall. What was going on?

Q2. And, since it was so mild this fall, were the plants hardened off enough to put straw mulch on in December?

A1. The strawberry plants in our research plots developed brilliant coloration this year, also. And, I just spoke with Dr. Marvin Pritts at Cornell who noticed the same thing in New York. Definitely widespread environmental factors were the cause. The process of strawberry leaf reddening in the fall is similar to fall color development in trees, and we all notice that there are good years and bad years for fall color. With trees, color development begins as chlorophyll formation stops and chlorophyll molecules are broken down in the plant, allowing the colors of xanthophylls and carotenes (yellows and oranges) to show through. As chlorophyll production ceases, anthocyanin production (causing reds and purples) in the leaves is increased. Higher starch levels in the leaves, which may have occurred with the longer fall, cause a greater production of anthocyanins, hence more intense colors. Anthocyanins, by the way, are also what causes the color in strawberry fruit. Second, nitrogen deficiency and magnesium deficiency cause a reddening of old leaves. With nitrogen, proteins are broken down, and with magnesium (the core of the chlorophyll molecule) chlorophyll is broken down to allow translocation of nitrogen and magnesium to younger leaves. Uptake of both of these elements can be inhibited under dry conditions. Our dry conditions may have caused these elements, particularly magnesium, to be a little lower than usual in the plants to start with - at least, a number of tissue analysis that came through showed this. So, the plants may have essentially gotten a headstart on color development due to dry conditions, and had a better opportunity for color development with the long fall. Information on the development of fall coloration in leaves of trees was from an article in Penn State's Intercom, interviewing Dr. Marc Abrams, Professor of Forest Ecology and Physiology.

A2. I was concerned about mulching our strawberry plants, as were growers. Dr. Harry

Swartz, from the Univ. of MD, was up to Rock Springs on December 13, and was kind enough to do a freeze test on some crowns we dug that day. The plants were more hardened off than I had expected, and the test showed that our plants were ready to mulch at that point. I expect that even those plants in slightly warmer areas would have been fine by then, too. We still held off mulching until December 20. Soil temperatures at that point were great for this purpose (40 degrees F).

Got a question? Send it to Kathy Demchak, at 102 Tyson Bldg., University Park, PA 16802. You will be credited with the question, or can remain anonymous, as you wish.

Potato Musings

Bill Lamont, Department of Horticulture

Potato Program at the Mid-Atlantic Fruit and Vegetable Meeting in January

Bill Lamont, Department of Horticulture

I have included the program for the potato sessions so we can start to advertise the sessions and hopefully have a good crowd in attendance. Share the information with others and make sure that all potato growers get the word.

Tuesday, January 29, 2002 PM

Session E

Potatoes

Tuesday, January 29, 2002, PM

Topics and Speakers

Presiding: Bob Leiby, Lehigh County Cooperative Extension

1:30 PM	Reinventing the Potato-Not The Same Old Spud- Tim Conner, President and CEO, National Potato Promotion Board
2:15	Marketing Pennsylvania Potatoes-Opportunities and Problems- The Broker's View Roger Springer- PA Potato Grower Cooperative Ron Hoover-EK Bear John Hurst-Hurst Potato Sales Ray Hendricks-A.C.E.
3:00 - 3:15	Industry Show and Tell
3:15	USDA Potato Breeding Program- An Update - Dr. Kathleen Haynes, USDA/ARS.

4:00	Developing Products for Specialty Potatoes in Pennsylvania- Dr. Luke Laborde, Department of Food Science, The Pennsylvania State University
4:30	Adjourn

Wednesday, January 30, 2002, AM

Session E

Potatoes

Topics and Speakers

Presiding: Ron Hostetler, Cambria County Cooperative Extension

9:00 AM	Varieties for the Chipping and Tablestock Industry- Dr. Don Halseth, Department of Horticulture, Cornell University, Ithaca, NY
9:30	Producing Potatoes Using Plasticulture-Dr. Bill Lamont, Department of Horticulture, The Pennsylvania State University
10:00 - 10:15	Industry Show and Tell
10:15	Fertilizing for High Quality Potatoes-Dr. Gregory Porter, Department of Applied Ecology and Environmental Science, University of Maine, Orono, ME
11:00	Potato Harvesting to Reduce Bruising- Dr. Don Halseth, Department of Horticulture, Cornell University, Ithaca, NY
11:30	Handling Potato Seed for Optimum Performance-Dr. Steven B. Johnson, Crops Specialist, University of Maine Cooperative Extension, Presque Isle, Maine
12:00 - 1:30 PM	Lunch and Visit with Exhibitors

Session B

Potatoes

Wednesday, January 30, 2002, PM

Topics and Speakers

Presiding: Tom Butzler, Clinton County Cooperative Extension

1:30 PM	Managing the European Corn Borer in Potatoes- Dr. Brian A. Nault, Department of Entomology, NYSAES, Cornell University, Geneva, NY
2:00	Update on Management Strategies for Late Blight and other Potato Diseases- Dr. Barbara Christ, Professor, Department of Plant Pathology, Penn State University,
2:30	Management Issues in Storing Potatoes-Dr. Roger Brook, Extension Engineer, Michigan State University, East Lansing, MI
3:00 - 3:15	Industry Show and Tell
3:15	Proper Ventilation of Potato Storages- Todd Forbush, Engineer, Techmark Inc., Lansing, MI
4:00	Managing Potato Storages Under Disease Pressure Situations - Dr. Steven B. Johnson, Crops Specialist, University of Maine Cooperative Extension, Presque Isle, Maine 04769
4:30	Adjourn

Upcoming Meetings

Bill Lamont, Department of Horticulture

Local

January 5-10, 2002: Pennsylvania Farm Show, Harrisburg PA. Contact: Dr. Pete Ferretti (814) 863-2313.

January 17, 2002: Morrison's Cove Produce Auction Meeting, Martinsburg, PA. Contact: Tom Ford (814) 940-5989

January 21, 2002: New Holland Vegetable Growers Day, New Holland PA. Contact: Tim Elkner (717) 394-6851

January 24, 2002: Susquehanna Regional Vegetable Meeting, Mifflinburg PA. Contact: Jeff Mizer (570) 837-4252

February 6, 2002: Northeast Vegetable Growers Meeting, Thompson's Dairy Bar, Clarks Summit, PA. Contact: John Esslinger (717) 963-4761

February 7, 2002: Tri-County Vegetable and Small Fruit Meeting, Penn Township

Community Bldg., Shippensburg, PA. Contact: Steve Bogash (717) 263-9226

February 19, 2002: Lebanon County Auction Vegetable Meeting, Shaefferstown Fire Community Building, Shaefferstown PA. Contact: Ginger Pryor (717) 240-4391

February 20, 2002: Cambria and Somerset Regional Vegetable and Potato Meeting, Ebensburg, PA. Contact: Ron Hostetler (814) 472-7986

February 28, 2002: Lehigh/Schuylkill County Potato Growers Meeting, Schnecksville Grange in Neffs PA.. Contact: Bob Leiby (610) 391-9840

March 5, 2002: Schuylkill County Regional Vegetable Growers Meeting, Extension Office, Pottsville, PA. Contact: George Perry (570) 622-4225

March 6, 2002: Southeastern Vegetable Growers Meeting, Heritage Restaurant, Franconia, PA. Contact: Mary Conklin (610) 489-4315

March 7, 2002: Kutztown Vegetable Auction Growers Meeting, Fleetwood Grange Hall, Kutztown, PA. Contact: John Berry, Lehigh County Extension Office (610) 391-9840 or Laura McNutt, Berks County Extension Office (610) 378-1327

March 12, 2002: North Central Vegetable Meeting, Pleasant Gap, PA. Contact: Tom Butzler, (570) 726-0022

March 13, 2002: North Central Vegetable Producers Conference, Coudersport, PA. Contact: Greg Burns (814) 776-5331

March 14, 2002: Erie County Potato and Vegetable Growers Meeting. Contact: Andy Muza (814) 825-0900

March 30, 2002: Pond Management for Irrigation, Livestock and Recreational Uses. Biglerville Fruit Lab, Biglerville PA. Contact: Steve Bogash (717) 263-9226

Regional

January 9-11, 2002: The 2002 Delaware Vegetable Growers Meeting, Harrington Fair Exhibit Hall, Harrington, DE. Contact: Tracy Wooten (302) 856-7303.

January 11-14, 2002: New York State Vegetable Growers Association's 14th Annual Conference and Trade Show, Convention Center at Electronics Parkway, Syracuse, NY. Contact: (607) 539-7648.

January 14, 2002: New York State Berry Growers Association's Annual Meeting and Educational Sessions, Convention Center at Electronics Parkway, Syracuse, NY. Contact: (607) 539-7648.

January 15-17.2002: Vegetable Growers Association Annual Meeting and Trade Show,

Atlantic City, NJ. Contact: Phil Traino (856) 985-4382.

January 29-31, 2002: Mid-Atlantic Fruit and Vegetable Growers Convention, Hershey, PA. Contact: Bill Troxell (717) 694-3596.

February 4-6, 2002: New York State Framers' Direct Marketing Association's Direct Marketing Conference; Holiday Inn, Auburn, NY. Contact: Diane Eggert (315) 475-1101.

February 6-8, 2002: Ohio Fruit and Vegetable Growers Meeting, Seagate Center and Radisson Hotel, Toledo, OH. Contact: John Wargowsky (614) 249-2424.

February 15, 2002: The Northern Piedmont Specialty Crops School, Oxford, NC. Contact: Carl Cantaluppi (919) 603-1350.

February 20-23, 2002: Mid Atlantic Direct Marketing Conference, York, PA. Contact: John Berry (610) 391-9840.

March 22-23, 2002: Passive Solar Greenhouse-Design, Construction and Year around Production. Contact: Steve Moore (717) 225-2489

National

February 23-26, 2002: 30th American Society for Plastics Congress, San Diego, CA. Contact: Pat Heuser Phone: (717) 238-9762 Fax: (717) 238-9985 or website