

The Vegetable and Small Fruit Gazette

Vol. 8, No. 5- May 2004

Horticulture Department
The Pennsylvania State University

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Tip for the Month-- “Kind words can be short and easy to speak, but their echoes are truly endless”.

Comments from the Editor

Bill Lamont, Department of Horticulture

It is getting warmer each day! We still have had a couple of pretty chilly nights and Kathy Demchak's great article filled with facts and humor on frost protection is a must for anyone who has ever done frost protection of strawberries. I want to thank George Perry for his excellent article “**Blueberry Establishment**” and Lee Young for her sending a couple of excellent articles that she found. This may take care of Lee's article for the June 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

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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Blueberry Establishment

George Perry, Extension Agent Schuylkill County

If you are thinking about blueberry production for your operation the following items must be considered. Site location and soil preparation are two fundamentals items you must first consider when establishing a blueberry planting. Determine which sites on your operation are the most suitable for growing blueberries. Good air circulation must be taken into consideration when selecting the site. Frost pockets can be a problem in some parts of the state that must be evaluated when selecting the site. Also, good air circulation will help reduce disease during bloom and throughout harvest. The two major disease problems can be gray mold and mummy berry. A good time to see if the site drains well is in the winter after a heavy rain. After 24 hours if water is still standing in puddles, that indicates the location is a poor location for blueberries. If you have no other location consider drainage with plastic drain tile located 3 to 5 feet below the soil surface. This must be installed before planting. The site needs to have all noxious weeds removed. The year before is the best time to accomplish this task. If the site is exposed to high winds consider a windbreak. Windbreaks in the winter can prevent desiccation of the plants and in the spring help improve pollination during bloom by having bees exit their hives earlier and stay longer in the field. The site is a long-term investment with plants lasting up to 50 years if properly managed. The ideal site is a well-drained, acid sandy soil with an organic matter content of more than 3 %. A site like this is hard to find in Pennsylvania.

So modifications must be considered before planting. The next step is to soil test. Take two tests, one in the upper 12 inches of the field and a subsoil test in the 12 to 24 inch range. Be sure to take ample samples to obtain a true random sample of the area. The subsoil area is where most of the blueberry roots will be located. Blueberry plant roots generally do not go below 18 inches in the soil. Blueberries do not grow well in swampy areas. The ideal water table for growing blueberries is between 15 and 24 inches. The ideal soil pH should be between 4.5 and 5.5. If the soil test comes back above the ideal pH,

amendments must be made to the soil before planting. Aluminum sulfate and sulfur are the two preferred materials used to lower pH. It takes 5 pounds of aluminum sulfate to equal 1 pound of sulfur. Toxicity can be a problem if too much aluminum sulfate is applied. Sulfur is the preferred material and it must be mixed with the soil before planting.

Once the fertility is corrected it's time to select cultivars for planting from a reliable supplier. The per capita consumption of blueberries in North America is rising, according to the North American Blueberry Council. The average consumer ate 14.2 ounces of blueberries in 1995 up 20% from the 11.8 ounces in 1992. In 1986 per capita consumption was 9.8 ounces. Consumption of fresh was 4.8 ounces in 1995 compared to 3.6 ounces in 1986. The awareness of health benefits from blueberries has helped to increase consumption by the general public.

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Reduce Microbial Contamination with Good Agricultural Practices

Arun Rangarajan, Marvin Pitts, Steve Reiners, Laura Pederson, GAPs Program
Cornell University (www.gaps.cornell.edu) (Lee Young County Extension Director, Commercial Horticulture Agent, Washington County thought this would be an excellent article for the Veg. and Small Fruit Gazette)

Outbreaks of foodborne illness make news headlines on a regular basis. In the U.S., it is estimated that as many as 76 million people contract some type of foodborne illness each year. As a result, over 325,000 are hospitalized and about 5,000 deaths occur. Salmonella on tomatoes and cantaloupes, *E. coli* 0157:H7 on lettuce and in apple juice, hepatitis A on strawberries, and Cyclospora on raspberries have shaken consumer confidence in the safety of fruits and vegetables. Since 1987, the number of produce-associated outbreaks has doubled, raising concern among the produce industry, government agencies, and consumers.

From planting to consumption, there are many opportunities for bacteria, viruses, and parasites to contaminate produce. On the farm, soil, manure, water, animals, equipment, and workers may spread harmful organisms. Produce may be harvested on a farm, processed in one plant, repackaged in another, then stored, displayed, or served by an institution or in the home. Each of these steps is an opportunity for harmful microorganisms to enter the food supply.

How much foodborne illness originates on the farm? *No one knows*. Are there reasonable steps that a grower can take to reduce the risk that pathogens will contaminate the food produced on the farm? *Absolutely*.

Clean Soil

The improper use of manure can be a risk factor contributing to foodborne illness. Pathogens such as *E. coli* 0157:H7, *Salmonella*, and *Campylobacter* can be present in manure slurry and soil for up to 3 months or more, depending on temperature and soil conditions. *Listeria* can survive on vegetables growing in the soil, even though it may not survive in the soil itself. *Yersinia* can survive in soil for up to 330 days. Composting manure, incorporating it prior to planting, and avoiding top-dressing with fresh manure are important steps that can reduce the risk of contamination while making use of this important source of nutrients. Excluding domestic and wild animals as much as possible from production fields will help reduce the risk of manure (fecal) contamination.

Clean Water

When using surface water for irrigation, test quarterly for fecal coliforms, especially if water passes close

to sewage treatment or livestock areas. Make sure that water used for produce cooling, washing, dipping, and processing operations is drinkable (potable). Whenever possible, use chlorinated water. Always make ice with potable water.

Clean Hands

Attention should be paid to worker hygiene in the field and the packing house. Workers who pick, sort, grade, or pack produce must wash their hands after using the restroom. Hepatitis A outbreaks have been linked to infected workers. Teach workers about microbial risks. Provide soap, clean water, and single-use towels in the field and insist that all workers wash hands before handling fruits and vegetables.

Clean Surfaces

Before harvesting or packing and at the end of each day, clean all bins and work surfaces. Sanitize surfaces using recommended chemicals and procedures (consult local extension service for specific recommendations).

There is no way to guarantee that everything we grow and consume is free of harmful microbial contamination. The risk can be reduced if preventative steps are taken before produce leaves the farm. This brochure contains detailed suggestions on how you can reduce risks of microbiological contamination on the farm.

Minimize Pathogen Contamination During Production and Harvest of Fresh Produce

Select Produce Fields Carefully

- Review land history for prior use and applications of sludge or animal manure.
- Choose fields upstream from animal housing.
- Know upstream uses of surface water and test water quality as needed.
- Prevent runoff or drift from animal operations from entering produce fields.

Store Manure

- Store slurry in continuously loaded systems for 60 days in summer or 90 days in winter prior to field application.
- Consider satellite storage for slurry used on produce fields.
- Compost manure properly to kill pathogens.

Time Applications and Incorporate Manure

- In fall- apply manure to all planned vegetable ground, preferably when soils are warm (>50°F), non-saturated, and cover cropped.
- In spring- incorporate manure two weeks prior to planting.
- Whenever possible, incorporate manure.
- Do NOT harvest produce within 120 days after manure application.
- Keep records of application rates, source, and dates.

Do NOT Sidedress with Manure

- ABSOLUTELY DO NOT SIDEDRESS with fresh or slurry manure or manure 'tea' or mulches containing fresh manure.
- OK to sidedress with mature composts or compost teas.

Exclude Animals

- NO grazing of livestock near produce fields.
- Minimize wild and domestic animal traffic in produce fields.

Promote Worker Hygiene in the Field

- Provide and maintain clean restrooms.
- Supply soap, clean water and single-use towels for hand washing and enforce use.

Test Irrigation Water Quality

- Identify water source for irrigation. Municipal drinking water = low risk; potable well water = minimal risk if well casing is maintained and livestock excluded from active recharge area; and surface water = high risk
- Test quarterly or during season (beginning, mid or high draw, and at harvest) if water
- source passes near livestock or sewage treatment.
- Filter or use settling ponds to improve water quality.
- Use potable water for crop protection sprays.
- Maintain records of water tests.

Clean Harvest Aids

- Check that bins are clean and in good repair.
- High-pressure wash and sanitize bins prior to harvest and clean bins daily during harvest.
- Remove excess soil from bins in field.
- Ensure that packing containers are not overfilled and protect produce adequately
- from bruising and damage.

Handle Produce Carefully During Harvest

- Avoid standing in bins during harvest to reduce pathogen spread by shoes.
- Minimize bruising of produce during harvest.
- Remove excess soil from produce in the field.

Promote Cleanliness at U-Pick

- Invite customers to wash their hands prior to entering fields.
- Provide clean and convenient restrooms.
- Supply soap, clean water, and single-use towels and encourage use.

Keep Produce Cool

- Cool produce quickly to minimize growth of any potential pathogens.
- Use ice made from potable water.
- Store produce at appropriate temperatures to maintain good quality.
- Do not overload coolers.

Promote Worker Hygiene and Health

- Teach workers about microbial risks and the importance of good hygiene.
- Provide clean restrooms with soap, clean water, and single-use towels.
- Post signs in restrooms and enforce hand washing.
- Provide non-food contact jobs for sick employees.

Monitor Wash Water Quality

- Use potable water for all washes.
- Maintain clean water in dump tanks by sanitizing and changing water regularly.
- Chlorinate wash water.

_ Monitor chlorine levels

_ Maintain 150 ppm for leafy vegetables and up to 500 ppm for other crops

_ Maintain water pH at 6.0-7.0

_ Provide final rinse if using >100 ppm chlorine

- Avoid tank water temperatures more than 10°F cooler than produce temperature.

Sanitize Packing House

- Clean and sanitize loading, staging, and all food contact surfaces at end of each day.
- Exclude all animals, especially rodents and birds from the packing house.
- No smoking or eating in packing area.

Transportation and Refrigeration

- Check and clean trucks prior to loading.
- Sanitize if animals previously hauled.
- Pre-cool vehicles prior to loading.
- Ensure that refrigeration equipment is working properly.

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Entertainment farming, Agri-Tourism, Family Farm Vacations

Marcy A. Tudor, President/Pennsylvania Farm Vacation Association, Inc.

Entertainment farming. Agri-Tourism. Farm stay vacationing.

Call it anything you like, the idea of opening your family farm to visitors is appealing to growing numbers of farm owners as a way to generate income and remain on the farm.

Small, family-owned and operated farms across the country are finding the public's desire for a farm experience to be strong and growing. At least one state has re-directed the bulk of its agriculture funding and efforts into rural tourism. Menasha Ridge Press, creator of the popular Unofficial Guide travel books, recently launched The Best of American Farms series to "enrich your spirit as it celebrates the family bonds and the formation of uniquely American character molded by a way of life directly connected to the land." What is Agri-Tourism? Agricultural tourism merges the world of travel with experiences of farming and our food system. Pennsylvania Farm Vacation Association members can be found in every corner of the Commonwealth. The range of Pennsylvania farm experiences and accommodations includes everything from horse back riding to herding ostrich, traditional farm house comforts to contemporary log home luxury.

Getting Started

Before you answer the question of what kind of farm experience you might offer to tourists, you should first consider whether you enjoy interacting with people-from pre-school aged to motor coach traveling seniors. If you have the enthusiasm, the Pennsylvania Farm Vacation Association can help you design your farm programs, walk you through any legal and financial consideration, and most important, help you attract visitors through group media and marketing efforts. "There is no single formula for how to make agri-tourism work," says Marcy Tudor, Pennsylvania Farm Vacation Association president. "Each one of our other details can be learned easily."

Farm Vacation Basics

Every farm stay vacation has some basic ingredients. There must be something for the visitor to see. Activities can range from tours of greenhouse operations and milking parlors to displays of folk craft and crop art. Next, there should be something for visitors to do. Sometimes that's as simple as fee hunting and fishing on the property. Other times it involves close instruction and rolling up their sleeves. Learning by doing-anything from country cooking to preparing herbal remedies to traditional farm operations-has a strong appeal.

Finally, there must be something to buy. Tourists want to bring something of their experience home. "Consider the phenomenal success of the Cracker Barrel retail concept," says Tudor. "People love the notion of a quaint farm store, something more personal than the wide aisles and fluorescent lights of a big box retailer."

Join Today

If you own a farm that is already offering farm vacations, the Pennsylvania Farm Vacation Association is a great way to market the farm and to network with other farms. The association meets twice each year at member farms, and potential members are invited to our meetings to have questions answered. We provide a nice packet of information for new members. Visitors to the Pennsylvania Farm Vacation Association website (www.pafarmstay.com) and requests for our brochure are consistently growing, and our members agree that membership in PFVA is their most reliable source of referrals and guest reservations.

Web Resources

The Arkansas-based Appropriate Technology Transfer for Rural Areas (ATTRA) offers a variety of information on sustainable agriculture, including agri-tourism. <http://attra.ncat.org/attra-pub/entertainment.html>

Founded in 1982, Menasha Ridge press publishes 20 titles each year under its own imprint, specializing in outdoor recreation, travel, dining, and reference. To read more about the Best of American Farms series, go to: (<http://www.menasharidge.com/amfarms.htm>)

Learn more at <http://www.pafarmstay.com> or call 1-888-856-6622
Next meeting: November 1, 2004 @ Weatherbury Farm (Avella, PA)

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Two More Workshops for Training Extension Professional and Vocational Agriculture Teachers on High Tunnel Technology to be conducted in 2004

Bill Lamont, Department of Horticulture

We are offering two more workshops funded by a Professional Development Grant from Northeast SARE Program to train extension specialists, county agents and vocational agriculture teachers on the use of high tunnel technology. The objective of the program is to train the trainers. Each workshop will be two days and two nights lodging and mileage up to 500 miles will be covered for participants. **The dates and location of the workshops are: June 29 and 30, 2004 at the High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA and August 3-4, 2004 at the University of New Hampshire Horticulture Farm, Durham, NH.** The states we are soliciting participants from are Connecticut, Delaware, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia, Virginia, Ohio and Washington, D.C. Class size will be limited to 50 per workshop. Each workshop will be two days with a mixture of classroom presentations on the different components of high tunnel technology, "hands-on" participation, and presentations by

growers utilizing this technology.

A high tunnel manual will be given to each participant and will serve as a handy reference on all aspects of this technology. To sign up for the workshop or for more information contact Bill Lamont, Phone: 814-865-7118 or E-mail: wlamont@psu.edu.

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The Organic Way- Diagnostic Services Available at Penn State

Elsa Sánchez, Assistant Professor of Horticultural Systems Management

Penn State offers a variety of diagnostic services that may be useful to organic growers in farm management. Kits for these services are available through local cooperative extension offices. When using the services it is best to carefully follow directions provided in the kits to obtain accurate results. It is also urged that plant samples be mailed to the diagnostic services immediately after collection to avoid drying out of the samples which can lead to inaccurate diagnosis. When diagnosing plant diseases and identifying insects it is encouraged that county extension educators are contacted first to aid in diagnosis.

Agricultural Analytical Services Laboratory

Services Provided

Personnel at the Agricultural Analytical Services Lab will analyze soil, soilless media, compost, manure and tissue samples for nutrient status. Fees for this service vary depending on the type of testing conducted. Standard soil fertility tests cost \$6.00 per sample, standard plant analysis tests cost \$18.00 per sample and standard compost tests start at \$42.00.

Contact Information

Agricultural Analytical Services Laboratory
College of Agricultural Sciences
Penn State University
Tower Road
University Park, PA 16802-1100
Phone: (814)-863-0841
Fax: (814)-863-4540
Email: AASLAB@psu.edu
Website: www.aasl.psu.edu

Plant Disease Clinic

Services Provided

Personnel at the Plant Disease Clinic isolate and identify pathogens causing plant diseases from plant samples. Currently, this is a free service offered through the Department of Plant Pathology for operations in Pennsylvania.

Contact Information

Plant Disease Clinic
Department of Plant Pathology
Penn State University
220 Buckhout Lab
University Park, PA 16802
Phone: (814) 865-2204
Fax: (814) 863-7217

Insect Identification Lab

Services Provided

Personnel at the Insect Identification Lab identify insect samples. Currently this is a free service offered through the Department of Entomology.

Contact Information

Department of Entomology
Penn State University
501 ASI Building
University Park, PA 16802
Phone: (814) 865-1896
Fax: (814) 865-3048

Nematode Diagnostic Service

Services Provided

Personnel at the Nematode Diagnostic Service conduct assays on soil or plant samples to determine the presence of plant-parasitic nematodes. When plant-parasitic nematodes are present, their quantity is determined and the risk of the nematodes causing crop damage is assessed. This service currently costs \$10 per sample.

Contact Information

Penn State Nematode Diagnostic Service
College of Agricultural Sciences
PO Box 330
Biglerville, PA 17307-0330
Phone: (814) 717-6116 extension 3
Fax: (717) 677-4112

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 ess11@psu.edu.

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Bug vs. Bug - A Collection of Articles on Biocontrol of Plant Pests

Cathy Thomas, Integrated Pest Management Program

Pennsylvania Department of Agriculture

Cathy has developed a compilation of some of her articles that have appeared in the Vegetable and Small Fruit Gazette from 2000 to 2002. The publication is 49 pages with a soft cover. Copies can be obtained by contacting Cathy at the address listed below or phoning her. Cathy Thomas, Integrated Pest Management Program, Bureau of Plant Industry/Rm.100, 2301 N. Cameron Street, Harrisburg, PA 17110. Phone:717/705-5857

e-mail: c-cthomas@state.pa.us or cet3@psu.edu.

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

Cathy Thomas

Integrated Pest Management Program

Bureau of Plant Industry/ Rm. 100

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(717) 705-5857
c-cthomas@state.pa.us or cet3@psu.edu

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Strawberry Twilight Meeting at Wye, MD Research and Education Center

Kathy Demchak, Small Fruits Specialist, Department of Horticulture

This information is from Mike Newell at the University of Maryland:
The Wye Research Center Annual Strawberry Twilight Meeting will be held on Thursday, May 20 beginning at 6:00 p.m.

To be seen at this meeting: Outdoor annual hill culture with 3 cultivars (Chandler, Camarosa and Allstar), 2 planting dates, 2 floating row cover types, and 3 floating rowcover deployment dates; the High Tunnel system for fall and spring production using fresh dug plants (planted Sept. 15, 2003) from a Colorado nursery; and spring greenhouse strawberry production using multi-crown dormant plants (planted 2/22/04) from a nursery in Canada.

The Wye Research and Education Center is located on the Eastern shore of Maryland about 7 miles southeast of Queenstown. Directions are available from the WREC Web site at <http://www.agnr.umd.edu/MAES/WREC/index.cfm> or by calling Debby Dant at 410-827-8056 ext. 115, or Mike Newell at 410-827-7388. Advance registration is not required.

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On Frost Protection...

Kathy Demchak, Small Fruits Specialist, Department of Horticulture

Those who are smart learn from other people's mistakes. While doing frost protection, I've made some goofs, but also found some things that make the job easier. I hope that even seasoned frost-protectors can glean a few helpful tidbits from my experiences below, or at least get a chuckle. For those of you who are considering strawberry plasticulture production, I hope you can get an idea of what your Springs can be like. The dates of frost protection, and temperatures recorded, are from the spring of 2002 when we had 15 nights of frosts in 4 weeks while our 6 cultivars of berries were in bloom. Thanks to the row covers, irrigation was needed on "only" 9 of the nights, and only for half as much time as it would have been without the row cover. I'm sold on row covers for frost protection, whether for matted-row or plasticulture strawberries. In fact, for the last 2 years when I had matted-row berries in bloom (2001 and 2003), the row cover turned out to be all that was needed.

April 22, 2002. 3:00 p.m. The Sweet Charlie blooms are at popcorn stage. Cold temperatures (high 20's and low 30's) are forecast for the next few nights. While attending a Strawberry School at NC State hosted by Barclay Poling and crew a few years back, I heard about the advantages of irrigating for frost protection overtop of a row cover, thereby forming "igloos". So this year, I decide to give this a try. After all, I already have the rowcover I was using for winter protection – Typar T-518™. It's a sunny clear day, so around the middle of the afternoon, I pull the row covers on to allow some heat to build up, and make sure that the irrigation that's set up overtop the row cover is working. I set the frost alarm to call me when

the temperature outside of the row cover reaches 38 degrees to allow driving time (1/2 hour) to the farm, assuming that on clear nights, the temperature will drop quickly.

April 23. 6:00 a.m. The frost alarm calls me. Since the sun will be up by the time I drive to the farm anyway, I don't see much point in starting up the irrigation. Given that it's been a wet spring already, and the plants are just in the early stages of bloom, I'd rather not turn on the irrigation unless absolutely necessary. A few percent of the blossoms damaged won't be as bad as setting up perfect conditions for disease.

2:30 p.m. Another frost is forecast for tonight. I leave the alarm setting to call at 38 degrees, but program it for a 30 minute delay to keep it from calling unnecessarily just before the sun comes up. I pull the row cover back on in the afternoon after a sunny, cool day.

April 24. 12:30 a.m. The frost alarm calls to alert me of a low reading. The computer-generated voice sure sounds perky. I head out to the farm, armed with a flashlight and feeling amazingly awake. I check the temperature at strawberry level in the field. Holy Guacamole! It's 21 degrees outside of the row cover. Wish I wasn't in the low spot on the whole darn farm. Worried, I crawl under the row cover to check the temperature there, and am relieved to find the temperature is at 29 degrees. I turn on the irrigation to keep the temperature from dropping any further, and it stays put. I decide to nix the delay, given my driving time.

6:15 a.m. The sun is rising. The field is sparkling. There are parts of rainbows in the mist from the sprinklers. The birds are singing like crazy. I conclude that it was worth staying up most of the night just for this moment.

7:15 a.m. The air temperature is up to 32 degrees. I turn off the irrigation, and crawl under the row cover to check the temperature – hmmm, it's already up to 40 degrees under there. It's also foggy in there. I crawl back out, and realize that a co-worker who's arrived has become convinced that I've lost my marbles while watching me slime out from under the cover. I make a mental note to buy one of those temperature sensors so I can get the reading under the row cover without actually getting under the row cover.

April 25. It's cloudy. No frost forecast for tonight.

April 26. 4:00 p.m. It was cloudy most of the day, so I didn't figure many pollinators would be out, so I just left the row cover on for today.

9:00 p.m. I decide to hit the sack earlier tonight.

11:30 p.m. The frost alarm has that one figured out. It just calls me earlier. I head out to the farm again. It was one of those days that you don't like to see. Cloudy all day, then partly cleared off during the evening and was a bit breezy. Not much chance for heat to build up under the row cover this time.

12:00 a.m. I arrive at the farm and check the temperatures. Only 2 degrees difference - 30 degrees outside, 32 degrees under the cover. Well, sometimes you win...and sometimes... I turn on the irrigation, all's functioning, sprinkler heads are turning.

April 28- May 3. Sleep. Life is good.

May 4th. It's cool, and breezy, with clearing off forecast again for tonight. Amazing how often that seems to be the situation.

9:30 p.m. The frost alarm calls. It's almost windy – 8 to 9 mph winds. I worry about what to do for a while. The temperature under the row cover is 34. Better turn the irrigation on. Even with the wind, the temperature under the row cover only drops one degree.

12:30 a.m. All's working except for one orifice on one sprinkler head. I jam a piece of wire into the orifice, dislodging whatever's in there. Must have been something soft, as the unidentified crud was expelled, and I get soaked. I'll have to remember that having a birds-eye view of the sprinkler orifice is not necessarily desirable. I knew that. By the way, I've found that the jam-in-the-wire technique doesn't work when harder objects, such as acorns, clog the sprinkler.

12:45 a.m. I decide to head down to the local convenience store, not far away, for a cup of coffee before the next sprinkler check. I note the sign on the door - "No shirt, no shoes, no service" with chagrin. With a T-shirt, turtleneck, flannel shirt, sweatshirt, and 2 jackets and boots on, I think I have that one covered. I realize my hair on one side of my head is wet and partly frozen. Maybe they'll think I just washed my hair. That won't explain one soaked pant leg on a night when it isn't raining. Oh well.

Fast forward... to May 14th. By now, the Chandler plants are nearly in full bloom, and I've raised the frost alarm settings to call me at 42 degrees. I need to allow for differences between the location where the frost alarm sensor is located (a relatively protected location) and the strawberry field at plant height, plus allow for driving time. Setting the frost alarm to call me at 42 degrees gets me to the farm in time for the field temperatures to be at 34 degrees outside the row cover, and a few degrees higher under the row cover. I'm consistently turning on the irrigation when the temperature under the row cover is at 34 degrees these days.

May 18th. 10:50 p.m. The frost alarm calls. The temperature is at 34 degrees outside the cover, and at 39 degrees under the cover. I turn on the irrigation at 12:30 a.m. All's working.

3:15 a.m. Pressure seems a little low. Then, I notice that all the sprinkler heads in one row are shutting down, one after the other. I shut down the irrigation, pull the end plug so I don't get drenched like I did the last time when I forgot to do that. I uncap a sprinkler head, and find fish parts. I find out later that the screen came off the outlet from the irrigation pond. After 45 minutes of fish extraction and/or sprinkler head replacement (9 of 15 sprinkler heads clogged), all's working. Amazing how one 8-inch fish can wreak so much havoc. At least, I think it was just one fish, and I think it was about 8 inches, based on a half-hearted reassembly of it at the end of the field in the headlights. After all, what else do I have to do at 4:15 a.m. out here? At least I'm not as hungry as I was an hour ago. Amazingly, because of the igloos, there's no damage from the shutdown.

May 19th. Someone more seasoned has told me that I should have had a screen in the main irrigation line. I install one, determined to avoid another fish incident.

May 22nd. 9:00 p.m. After being up 3 nights in a row with frost protection, a night of sleep is forecast. Yippee!

4:00 a.m. Whoever does the forecast should be fired. I wish Mr. Frost-Alarm Guy would stop ending his messages with that cheery "Have a good day." Or, at least change it to "Hope your sprinkler heads don't clog." I trudge out to the farm. Turns out it clouds up and the temperatures go back up slightly almost as soon as I turn on the irrigation. Can't turn it off now, or the evaporating water could cause more damage rather than the low temperatures alone. Someone has a bad sense of humor. Haven't been this tired since the kids were little.

May 23rd. 3:30 a.m. I'm out at the farm, yet again, but a serious warming trend is forecast for the long haul. So, I'm fairly certain this will be the last night I'll have to do this. It's clear, it's calm. I watch the sprinkler heads turn in the light of a bright moon with no flashlight, no headlights from the car. Total solitude, and no sound except the "Tsst – Tsst – Tsst" sound of the sprinklers. Another moment. Which only lasts a moment, because I notice that one of the darn sprinkler heads isn't turning. How'd a newt tail get wedged in there? And, where's the rest of the newt? Perhaps he only had a close shave?

Any resemblance to actual events or people above is purely noncoincidental.

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Potato Musings

Bill Lamont, Department of Horticulture

Potato Newsletter Worth Visiting

Bill Lamont, Vegetable Specialist, Department of Horticulture

This is a monthly electronic Potato Newsletter all about potatoes that should be of interest to anyone at all involved with potatoes. To view an html version of the Newsletter go to the following website:

<http://www.potatonews.com/newsletters/newsletter.asp?ID=36>

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Upcoming Meetings

Bill Lamont, Department of Horticulture

Local

July 14, 2004. Vegetable and Small Fruit Field Day. Horticulture Research Farm, Gate H, Rock Springs, PA. Contact: William Troxell, Executive Secretary, Pennsylvania Vegetable Growers Association, (717)-694-3596.

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)

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

Regional

June 29-30, 2004 High Tunnel Workshop to be held at the High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA. Workshop is funded by Northeast SARE Professional Development Program to train extension specialists, county agents and vocational agriculture teachers on the use of high tunnel technology. The workshop will be two days and two nights lodging and mileage up to 500 miles will be reimbursed for participants. The states we are soliciting participants from are Connecticut, Delaware, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia, Virginia, Ohio and Washington, D.C. The workshop will be a mixture of classroom presentations on the different components of high tunnel technology, "hands-on" participation, and presentations by growers utilizing this technology.

A high tunnel manual will be given to each participant and will serve as a handy reference on all aspects of this technology. To sign up for the workshop or for more information contact Bill Lamont, Phone: 814-865-7118 or E-mail: wlamont@psu.edu.

August 3-4, 2004. High Tunnel Workshop to be held at the Horticulture Farm, University of New Hampshire,, Durham, NH. The workshop is funded by Northeast SARE Professional Development Program to train extension specialists, county agents and vocational agriculture teachers on the use of

high tunnel technology. The workshop will be two days and two nights lodging and mileage up to 500 miles will be reimbursed for participants. The states we are soliciting participants from are Connecticut, Delaware, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia, Virginia, Ohio and Washington, D.C. The workshop will be a mixture of classroom presentations on the different components of high tunnel technology, "hands-on" participation, and presentations by growers utilizing this technology.

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September 13, 2004. Grower Workshop on High Tunnel Production. High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA. Contact Person: Lisa White, Phone: 814-692-4635 or e-mail: ldw112@psu.edu.

National

July 17-20, 2004. Annual Meeting of the American Society for Horticultural Science, Austin, TX. Contact: (703)-836-4606 or visit the ASHS website: ashs.org.

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