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The Passing of Douglas Sanders

Bill Lamont and Mike Orzolek, Department of Horticulture

Doug Sanders was a colleague and friend of Mike and mine for many years and we had Doug up to speak at our Mid-Atlantic Fruit and Vegetable Conference several times. We wanted to share his obituary with those that knew Doug. He will be sorely missed by all those that knew him especially, the growers that he helped over the years.

Douglas Charles Sanders, Professor of Horticultural Science at North Carolina State University, Raleigh, who was known world-wide for his expertise in vegetable production, passed away after a brief illness on Monday, April 17, 2006. Doug developed his love of plants and horticulture at a young age while growing up on a family farm in Mason, Michigan. He received his B.S degree in Vegetable Crops in 1965 from Michigan State University. He obtained his M.S. and PhD. Degrees in Horticulture in 1967 and 1970, respectively, from the University of Minnesota. Doug began his professional career at North Carolina State University in 1970 as an assistant professor specializing in Vegetable Production and was promoted to full professor in 1982.

Dr. Sanders was tirelessly committed to the teaching and research of vegetable production systems and their application worldwide. His life was filled with numerous accomplishments and recognitions as he provided leadership in many facets of the vegetable industry. Doug worked closely with North Carolina farmers and county extension agents to improve their vegetable production knowledge. His advice was sought after by all who worked with vegetables not only in NC, but in the US and around the world. His accomplishments included the establishment of the NC Vegetable Growers Association, the introduction of numerous new vegetable technologies (drip irrigation, plasticulture, precision seeding) and the introduction of new crops to NC such as asparagus, broccoli, sweet onions and leaf lettuce. Dr. Sanders served as Vice President of the Extension Division of the American Society for Horticultural Science (ASHS) in 1992-93. In 1992 Doug was named a Fellow of ASHS, and he will receive the 2006 Outstanding International Horticulturist award at the ASHS Annual Conference in New Orleans in August. He served as President of the Southern Region ASHS in 2000.

Doug distinguished himself as an international horticulturist with 38 trips abroad in the last two decades. Dr. Sanders distinguished himself as an international horticulturist with numerous trips abroad while working with and mentoring many students from Uruguay, Venezuela, Peru, Chile, China, and Thailand.

Dr. Sanders taught undergraduate and graduate courses and utilized new distance education technologies to reach audiences across North Carolina. Doug was a tireless worker with a passion for horticultural science and seemingly boundless amounts of energy. All who knew him benefited from his innovative ideas, unselfish encouragement and thoughtfulness. Doug will be missed not only professionally, but by all of his many friends for whom he was an inspiration and a great counselor. Doug is survived by his loving wife, Ellen and sister, Mary Sanders.

An endowment in Doug Sanders' name is being established. Contributions can be sent to the North Carolina Agricultural Foundation, Inc., Box 7645, NC State, Raleigh, NC 27695-7645.

An Update on the Pennsylvania Simply Sweet® Onion

[Lee Young](#), Penn State Cooperative Extension, Washington County

The Pennsylvania Simply Sweet® Onion is a branded onion, licensed through the Pennsylvania Vegetable Growers Association. The onion has been produced in Pennsylvania for several years under a set of production and grading standards that result in a very high quality, large, sweet, non-pungent onion. Simply Sweet onions are available from mid-July through September in supermarkets, at roadside farm markets, and some farmers' markets. The Simply Sweet onion program was developed as a joint effort of PSU, PVGA, PDA and private industry.

In order to use the trademarked name Pennsylvania Simply Sweet® on or to describe their onions, growers and handlers must be licensed by the Pennsylvania Growers Association's Simply Sweet Onion Committee. Growers and handlers can apply for a license and, if granted, must follow strict guidelines on production, grading, drying, and packaging the product. The number of licensed growers has risen steadily since the program's inception. Twenty growers were licensed in 2003, thirty-five in 2004, and forty-two in 2005. Forty-nine growers were licensed this year, with an estimated forty acres in production. Although there are now growers in nine of Pennsylvania's counties, most producers are located in either Lancaster County or Butler County. Growers either work with a licensed handler (Cross Creek Farms, LLC, or the Butler Onion Network, LLC) to market their crop, or they market their own crop through local supermarkets, roadside stands, farmers markets or restaurants.

The Pennsylvania Vegetable Growers Association's Simply Sweet Onion Committee was established in February, 2003, to administer the Pennsylvania Simply Sweet® onion trademark for the benefit of growers in the state. The committee was established to enable Pennsylvania growers to profitably grow and market premium sweet onions under the brand and licensing process. The basic goals of the committee are 1) to require advance marketing plans for the crop; 2) to cooperatively promote the onion; 3) to encourage the production of a quality product; and 4) to require the packaging of only US No. 1 product for the fresh market. The Committee oversees a testing program to assure quality of the product. The Committee represents growers, handlers, PVGA, and Penn State. I serve on the committee as a non-voting member and Secretary.

On behalf of the committee, I recently conducted a survey of 2005 license-holders to assess their educational, research and product promotion needs. Growers identified several priority needs for education and research, including disease control, weed control, variety selection, and efficient planting methods. Growers were generally satisfied with their insect control. A review of survey responses about pesticide application practices revealed that many growers were applying fungicides and insecticides using spray volumes that are not adequate to provide thorough coverage. These topics will be addressed at two onion pest management twilight meetings to be conducted in Butler and Lancaster counties in June. In addition, Dr. Orzolek will be producing and distributing a pest management newsletter for onion growers this summer, as well as conducting his on-going variety research. Based on feedback from the survey, the committee is procuring point-of-purchase materials to assist in the promotion of the Pennsylvania Simply Sweet® onion.

Questions concerning license applications and licensing agreements should be sent to the PVGA Simply Sweet Onion Committee, c/o Bill Troxell, PVGA, 815 Middle Road, Richfield, PA 17086. For general information and recommendations on growing sweet Spanish onions, see your local Cooperative Extension horticulture agent, or contact Dr. Mike Orzolek, Department of Horticulture, Penn State University, 814-863-2251.

Corn Earworm: Preliminary Results of Pyrethroid Resistance Tests from Pennsylvania

[Shelby Fleischer](#), [Dave Johnson](#), [Jo Anna Heberger](#), [Greg Payne](#)

Sweet corn is attacked regularly by three lepidopterans. Two of these, the corn earworm and the fall armyworm, are primarily immigrants from the south when they appear in Pennsylvania. These two are members of the same insect family, the Noctuidae, which include relatively strong-bodied species that are good flyers. The other species, the European corn borer, is a smaller species that overwinters well in our area.

Corn earworm populations in the southern U.S. have shown reductions in susceptibility to pyrethroid insecticides, where they are used to target the same insect species in cotton, sorghum, soybeans, and vegetables. Pyrethroids, however, are also the main class of chemistry currently used to protect against corn earworms in sweet corn in Pennsylvania. Examples include Asana, Baythroid, bifenthrin, Mustang, permethrin, and Warrior. We hypothesized that emigrants from southern populations showing increased tolerance to pyrethroids could affect insect pest control in the Northeast. Data testing the susceptibility of corn earworm to another pyrethroid, cypermethrin (Ammo®), has been accumulating for several years from southern and Midwestern states. Therefore, we looked at the susceptibility of corn earworms captured in Pennsylvania to cypermethrin.

We used moths collected in two methods from the Southeast Agricultural Research and Extension Center in Landsville, Lancaster County, PA in 2003, 2004, and 2005. First, we used moths collected from pheromone traps – this tests only males that have flown for an unknown distance, and are of unknown ages. Second, we collected larvae from corn ears in the field, and reared them

on a diet. This tests both males and females, prior to them flying, and at a very young adult age. In both cases, adult moths were held in cages for 24 hours with sugar water prior to the bioassay, and we only tested moths that appeared healthy at the time of the test.

We used a standardized adult vial test (AVT) bioassay. The insides of glass vials were coated (in acetone) with technical grade cypermethrin. The concentrations were 5 micrograms and 10 micrograms of cypermethrin/vial. Control vials were treated with acetone alone. The acetone was allowed to evaporate, leaving a coating of cypermethrin on the glass vials. One moth was placed in each vial, the vials were capped loosely and held at room temperature, and mortality recorded 24 h after the test was initiated. In a perfect situation, we should expect to see 100% survival of the moths in the control vials, very close to 0% survival of the moths tested at the 5 microgram rate, and definitely 0% survival at the 10 microgram rate.

Survival of pheromone-trap collected moths has been relatively low in the cypermethrin-treated vials. At the 5 microgram rate, survivorship ranged from 0 – 8% in Pennsylvania. Survival at the 10 microgram rate was even lower: from 0-3% in Pennsylvania. Some of this could be due to moths that tolerate the insecticide, but some could be due to random variation. Our only way to look at the random variation was to look at the control vials. In these controls, where we expect 100% survival, we observed 72% to 100% survival.

Dramatic increases, however, were clearly evident in the survival of adults reared from field-collected larvae relative to those collected from pheromone traps. Survivorship from reared moths was 12 to 27% at the 5 microgram rate, and 2 to 5% at the 10 microgram rate, in Pennsylvania. And we had cleaner tests when using reared moths: survival of reared moths in the control vials was always 100%.

This is part of a larger project where similar tests were conducted in neighboring states: More than 22,000 moths were bioassayed in five states from 2003 to 2005. In the worst case evaluation of the data, preliminary estimation using moths reared from field-collected larvae, averaged across locations and years, show 31% survival at the 5 microgram rate and 11% survival at the 10 microgram rate. We are currently conducting an error-checking process on the data from all states, and will look for patterns in the survivorship results. The results reported here is a preliminary snapshot of what we found in Pennsylvania.

So what management would we advise for commercial sweet corn growers? Our results suggest that pyrethroid-resistant corn earworms occur in the northeastern U.S. each year, but that they may be fairly rare. Since we are dealing primarily with migrants, then we cannot do much to alter the selective pressure that the moths are subjected to. In other words, altering the chemicals we use here will probably not have much impact on the population genetics of the corn earworm. That will require alterations at the place where breeding is occurring, which is to the south of us. This may happen in the future, due to factors such as the newer transgenes being developed for both corn and cotton, and due to resistance management efforts in these more southerly locations. It thus helps northeastern agriculture if we participate in more regional efforts looking at these migratory species.

We have **not** seen, or been able to document, any field failures from Pennsylvania or other northeastern states. In the Midwest, small plot efficacy trials clearly showed a great deal of

variability, including a loss of efficacy, in multiple locations in 2005. However, Midwestern growers also report using aerial application, and they expect some control against the adults with this method, and they also are not currently reporting field failures.

So what alternatives exist for Pennsylvanian growers? First, realize that corn earworm often arrives late. Using pheromone traps on your farm, and watching the immigration roughly approximated by a network of pheromone traps, helps you gauge when this pest is arriving. Penn State Extension and PVGA help display these data at www.pestwatch.psu.edu. Second, we currently expect the pyrethroids to continue to work, especially at lower population densities, and most of Pennsylvania rarely gets extremely high densities. Third, Bt-sweet corn is an option. You could use Bt-cultivars for plantings you expect to harvest in late August or thereafter. Do **not** expect to eliminate all sprays: Bt-sweet corn is very effective against European corn borer and corn earworm, but less effective against fall armyworm, and in the absence of any sprays we have seen problems with sap beetles, several species feeding on silks, and some aphid problems. Fourth, tank-mixing with, or switching to, the older carbamates or phosphates (Lannate or Larvin) if high rates of immigration occurs is an option. Be careful, these are materials with lower LD50s (and thus are more toxic to humans), and while we expect them to work today, the corn earworm had a history of resistance with carbamates and phosphates in cotton many years ago. Fifth, switching to an entirely new class of chemistry, with SpinTor[®] or Entrust[®], is an option. This has shown to be effective in tests in New York, but less so under higher pressure in neighboring Mid-Atlantic states, and we don't currently have much data from Pennsylvania. Sixth, there is the old method of putting oil on the silks. This has been developed as a method for growing organic sweet corn, with a backpack application method called the Zealator.

Clearly, we need some more research in this area, and regionally coordinated efforts at understanding the biology, migration, and management of the corn earworm, and other migratory noctuids. Hopefully, this report provides a snapshot of what we are currently seeing in our data.

New Insecticide Label Information for 2006

[Gerald M. Ghidui](#), Ph.D., Specialist in Vegetable Entomology, Rutgers University

(This article originally appeared in Rutgers Cooperative Research & Extension at the New Jersey Agricultural Experiment Station, Plant & Pest Advisory – Vegetable Crops Edition, April 19, 2006, Vol. 12 No. 4.)

Venom 70SG insecticide (Valent USA Corporation) was recently labeled with the EPA for use in cucurbits, fruiting vegetables, leafy vegetables, head and stem brassica, and potatoes. Venom is a new insecticide in the neonicotinoid class (active ingredient = dinotefuron), and controls many pests, including **cucumber beetles**, **potato beetles**, **flea beetles**, **aphids**, **grasshoppers**, **Harlequin bugs**, **squash bugs**, and **stink bugs**. There is a restricted entry interval (REI) of 12 hours.

Baythroid (Bayer Crop Science) has a new formulation, **Baythroid XL** that has a broad spectrum of activity and has a “Warning” signal word on the label. Also, several new vegetable groups have

been added to the label, including leafy vegetables, cucurbits, fruiting vegetables, and root, tuberous & corm vegetables.

Kelthane (dicofol) production will be slowly phased out and all manufacturing will be ended by June 2006. Kelthane WSP and Kelthane MF can still be distributed, sold and applied (as per label directions) legally. According to Dow Agrosciences, the US and global market for Kelthane has been experiencing a steady decline for several years as new miticide products and other technologies have been introduced. In addition, Kelthane regulatory costs continue to escalate. Given these conditions, Dow Agrosciences stated that they could not justify a commercial rationale to continue production and marketing of Kelthane.

Guthion (azinphos-methyl) labels will be terminated from “Group 2” uses. All sale of Guthion for these uses ceased as of 31 March 2006, but use of these products is allowed until 30 September 2006. For more information concerning termination of Guthion and Group 2 uses, visit the EPA’s website at <http://www.epa.gov>. For further information, or specific questions, contact Diane Isbell of EPA at isbel.diane@epa.gov.

Warrior insecticide is now off-patent and several generic formulations of this insecticide are now found on the market. Taiga Z, Lambda T and Silencer are all new generic versions of Warrior. It is possible that one of these, Silencer (M-Agan product) is the old IEC formulation of Warrior, and some workers may have skin sensitivity to this formulation (the new formulation of most brands, ICS, supposedly has reduced sensitivity to workers’ skin).

Capture LFR (bifenthrin), from FMC Agricultural Products Group, is a new formulation that is ready to be directly mixed with liquid fertilizer to control soil insects. Fertilizers that it can be mixed with include commonly used liquid starter or pop-up fertilizers. Consult the new label for complete mixing instructions and restrictions.

Admire PRO (imidacloprid) from Bayer Crop Science is an improved, highly concentrated formulation of imidacloprid with several new improvements over the old Admire formulation. The new formulation easily mixes with water, produces no foam, remains in suspension longer and has fewer precipitates. It pours more like water and leaves little residue in the container. Because Admire PRO is more concentrated than the old formulation, there is a new rate-range for all the labeled crops, ranging from 5 to 14 oz. per acre (there is no change in the crop labels). It can be applied in numerous ways, including foliar, soil, greenhouses, drenching, seed treatments, etc. for certain crops. Consult label for all crop uses, rates, restrictions, and application directions.

Oberon 2SC, (spiromesifen), by Bayer CropScience, is a new insecticide that effectively control **mites** and **whiteflies**, and is labeled on cucurbits, fruiting vegetables, leafy greens, brassicas, and tuberous & corm vegetables. However, Bayer has announced that there is a potential for phytotoxicity if applied to Chinese cabbage (bok choy) or rapini. Bayer no longer recommends the use of Oberon 2SC on either of these crops.

Actara (thiamethoxam), by Syngenta Corporation, is no longer labeled on the fruiting vegetables crops of tomato or eggplant. This material is listed in the 2006 Commercial Vegetable Production Recommendations for New Jersey as being labeled on these crops, but the label has been canceled.

However, it remains labeled for use on peppers. Note that this cancellation is for Actara only and does not affect the label for Platinum.

Courier 40SC (buprofenzin), from Nichino America, Inc., is now labeled on cucurbits (cucumbers, melons, pumpkins, squash), leaf and head lettuce, snap beans, and tomatoes for control of **leafhoppers** and **whiteflies**. Courier is a new class of insecticides that is effective against primarily the nymph stages, but also suppresses oviposition by adults and reduces viability of the eggs. This new miticide has a restricted entry interval (REI) of 12 hours.

Lumax and Camix Now Registered for Sweet Corn

[David H. Johnson](#), Penn State Southeast Research and Extension Center

Lumax and Camix, two soil-applied herbicides that have been labeled in field corn for the past few years, are now registered for sweet corn. Both products, made by Syngenta, contain mesotrione (also the active ingredient of Callisto, a postemergence herbicide which was registered for sweet corn last year), and s-metolachlor, the active ingredient in Dual II Magnum. Lumax also contains atrazine, and therefore is a restricted use herbicide and you must have a valid pesticide license to purchase and use the product. Camix is not restricted use. Lumax and Camix can be used **Preemergence** only on sweet corn. The labels warn that they should not be used after the corn has emerged, or severe injury may result. There are no restrictions on the types of sweet corn that it can be used on, nor are there any insecticide restrictions. Lexar, a similar product, is **not** yet registered on sweet corn.

Both Lumax and Camix give residual control of a broad spectrum of annual weeds, including grasses and broadleaves. Problem weeds for Pennsylvania sweet corn growers that are controlled by Lumax include crabgrass, foxtails, fall panicum, common lambsquarters (including triazine-resistant biotypes), morningglories, nightshade, pigweeds, smartweed, velvetleaf, and wild buckwheat. Partial control of common cocklebur and common and giant ragweed is also claimed. Additional control can be achieved by adding more atrazine to the spray mixture. Since these products are applied to the soil surface, they need to be activated by rainfall or irrigation soon after application for best weed control. If no rainfall occurs, a light cultivation can help activate the products.

Camix has a similar weed spectrum as Lumax, but the label does not include wild buckwheat, and cocklebur and ragweed control will probably be less than Lumax because of the lack of atrazine in this product.

In Penn State University studies, partially funded by the Pennsylvania Vegetable Marketing and Research Program, Lumax has shown good weed control and sweet corn crop safety. At the Penn State Southeast Research and Extension Center near Landisville in Lancaster County, Lumax gave excellent common lambsquarters and redroot pigweed control, and did not injure any of the sixteen commonly grown sweet corn varieties tested.

Users of Lumax and Camix must be aware of rotational crop restrictions, especially if they are considering other vegetable crops. As we I wrote in the February 2006 *Vegetable & Small Fruit Gazette*, **growers must wait at least 18 months** from the time of application before planting vegetable crops. Other products containing atrazine, such as Bicep II Magnum, Bullet, Cinch ATZ, and Guardsman Max (including the “Lite” versions of these products) also have 18-month restrictions on planting rotational crops.

When planning your weed control program for sweet corn, growers must consider the crops they want to plant into their fields the following year when choosing herbicides. For those planning to grow vegetable crops in those fields the following year, choose herbicides with less residual activity to avoid the potential for injury and illegal residues in their harvested crop. **Always refer to your product labels to ensure you can legally plant your planned rotational crop after use.**

That’s a Berry Good Question!!!

[Kathy Demchak](#), Department of Horticulture

Q. When I’m using overhead irrigation for frost protection, how much of the protection is from the warmth of the water that I’m applying? It seems like that might be as important as the water freezing, doesn’t it? (Anon.)

A. Several folks have asked about this wondering whether you get additional protection when the pond water is warmer. Since we humans can feel a big difference between 70 degree water and 32 degree water, but don’t feel much difference between 32 degree water and 32 degree ice, it seems like the water cooling down must have a big effect.

The definition of a BTU (British thermal unit) is the amount of energy required to raise one pound of water one degree Fahrenheit, or in reverse, 1 BTU is released when one pound of water cools one degree. So, if your pond water is at 55 degrees, when one pound of water drops from 55 to 32 degrees, it releases 23 BTU’s. The same pound of water then changing to ice releases an additional 144 BTU’s. So, yes, the warmth of pond water does add some heat to the system (mostly to the air on the way down), but its effect is small compared to that of the water freezing. So, don’t worry if your pond water is really cold.

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. You will be credited with the question, or can remain anonymous, as you wish.

Did You Lose the Trickle Tape?

[Kathy Demchak](#), Department of Horticulture

Well, this isn't specifically a small fruit topic, but thought some of you might find this helpful. Every now and then when laying trickle tape and plastic, someone forgets to hold down the end of the trickle tape, and away it goes. Eventually you figure out where the end actually is, and then you need to string a stretch of trickle tape to make it back to the header line. One easy way to do this is to get 2 10' sections of 1 or 1¼" diameter PVC pipe (the lighter type that is only meant to be drain lines), and push the replacement trickle tape through it. It must be of a diameter just big enough for the trickle tape to fit through so it can't bend back on itself. If you need a very long length, you can then add a coupler, push the tape all the way through a second section, and then insert the 2nd pipe with tape in it into the coupler. Pull the tape out of the end, and fasten it in place by putting on an end cap which both holds the tape and keeps soil out of the pipe. You can then insert the pipes under the plastic. You'll need to cut a slit in the plastic further down the row, and either take out the pipe only, or use the opening to send the pipe on down the row until you reach the end of the original tape and connect them.

Two Workshops for Training Master Gardener's on High Tunnel Technology to be held in 2006

[Bill Lamont](#), Department of Horticulture, Penn State University

We are offering two workshops funded by a Professional Development Grant from Northeast SARE Program to train Master Gardener's on the use of high tunnel technology. The objective of the program is to train the trainers: Cooperative Extension Educators, Vocational Ag Teachers and Master Gardener's. The two workshops in 2006 are being offered to Master Gardeners so they can better answer questions on this rapidly emerging technology. The workshops are being held on Saturday and **two nights lodging and mileage to and from the training site will be covered for the participants. Participants will also receive a lunch and a morning snack. Forms will be handed out at the workshop and then processed afterward for reimbursement of participants. The dates and location of the workshops are: July 1, 2006 at the Woodman Farm, University of New Hampshire, Durham, New Hampshire and August 26, 2006 at the Penn State High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA.** 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 40 per workshop.

The workshops are being held on Saturday to better accommodate the Master Gardener's who will be better able to attend on a Saturday versus a weekday. The workshop will be a mixture of classroom presentations on the different components of high tunnel technology, viewing actual high tunnels, and presentations by extension educators utilizing high tunnel technology.

Two publications: The New 2nd Edition High Tunnel Manual and Implementation of a Biocontrol Program for Insect Control in High Tunnels publications will be given to each participant and will

serve as a handy reference on all aspects of this technology. For more information on the workshop contact: Bill Lamont, E-mail: wlamont@psu.edu or Becky Grube becky.grube@unh.edu, or George W. Hamilton george.hamilton@unh.edu.

Partial listing of motels at which to stay for Penn State Workshop:

- Sleep Inn, 111 Village Dr., Phone: 814-235-1020
- Comfort Suites, 132 Village Dr., Phone: 814-235-1900
- Super 8 Motel, 1663 South Atherton St., Phone: 814-237-8005
- Motel 6, 1274 N. Atherton St., Phone: 814-234-1600
- Stevens Motel, 1275 N. Atherton, Phone: 814-238-2438
- Rodeway Inn, 1040 N. Atherton, Phone: 814-238-6783
- Days Inn, 240 S. Pugh St., Phone: 814-238-8454
- Nittany Budget Motel, 2070 Cato Ave, 814-238-0015

Partial listing of possible lodging for the New Hampshire Workshop:

- Durham Point Bed and Breakfast, 1 Sunnyside Drive, Durham, 603-868-1162
- UNH New England Center, 15 Strafford Avenue, Durham, 603-862-2801
- Courtyard @ Marriott, 1000 Market Street, Portsmouth, 603-436-2121
- The Pines Guest House, Corner 47 Dover Road, Durham, 603-868-3361
- Hickory Pond Inn and Golf Course, 1 Stagecoach Road, Durham, 603-659-2227
- Three Chimneys Inn, 17 Newmarket Road, Durham, 603-868-7800
- Comfort Inn and Suites, Weeks Crossing, Dover, NH, 603-750-7507
- Highland Farm Bed and Breakfast, 148 County Farm Road, Dover, NH, 603-743-3399

2006 Registration Form

Workshop Attending:

July 1, 2006 _____ (New Hampshire University)

August 26, 2006 _____ (Penn State University)

Name: _____

Address: _____

Telephone: _____

FAX: _____

E-mail: _____

Fax or e-mail the completed form to Dr. Bill Lamont:

FAX: 814-863-6139 or snail mail Bill Lamont, 206 Tyson Building, Department of Horticulture, Penn State University, University Park, PA 16802

E-mail: wlamont@psu.edu

DEP Issues Drought Watch for Entire State

April 11, 2006. Contact: Ron Ruman, Phone: (717) 787-1323

Lack of Rainfall Leads to Call for Voluntary Water Use Reduction

HARRISBURG -- Environmental Protection Secretary Kathleen A. McGinty today put all 67 Pennsylvania counties under a drought watch and called on residents to voluntarily reduce water use by 5 percent.

"Despite recent rainfall, precipitation levels over the last two months are below normal in every corner of the commonwealth," McGinty said. "Two-thirds of our counties are 50 percent or more below their normal precipitation levels. The remaining counties are reporting a deficit of at least 25 percent.

"Although conservation is a year-round responsibility, now is the time for residents to manage water resources even more carefully to avoid serious problems if precipitation levels do not return to normal in the coming weeks," McGinty said.

In addition to below normal precipitation, groundwater and surface water levels are low in many regions of the state. Even in areas with normal or near-normal groundwater and surface water levels, those levels are declining rapidly.

The Susquehanna River is 65 percent below its normal flow. Several streams and rivers recently posted record low flows for this time of year, including: Loyalhanna Creek, Westmoreland County; the Clarion River, Clarion County; Dyberry Creek, Wayne County; the Schuylkill River, Schuylkill County; Muncy Creek, Sullivan County; and Conodoguinet Creek, Cumberland County.

Public water suppliers, businesses and industries should monitor supplies during this drought watch period. Water-intensive commercial users should try to conserve water.

A drought watch is the lowest of three levels of drought status, asking for a 5 percent reduction in water use by residents. The next stage, a drought warning, calls for a voluntary reduction of 10 percent to 15 percent. A drought emergency, the final stage, includes mandatory water use reductions of at least 15 percent. Pennsylvania's last declared drought emergency was in 2002. All 67 Pennsylvania counties have been in normal status since seven counties on the western edge of Pennsylvania were upgraded from a drought watch to normal on June 18, 2003. With that upgrade, it was the first time since Aug. 8, 2001, that the entire state was normal.

"There are actions that all of us can take to reduce our daily water use in and around our homes," McGinty said. "Not only will these actions conserve water, but they also will help families save money."

Indoor water-conservation tips include:

- Using washing machines and dishwashers only when loads are full.
- Not running water continuously while shaving, brushing teeth or washing dishes by hand.
- Refrigerating tap water to avoid running the faucet waiting for cold water.
- Taking shorter showers.
- Installing new shower heads and sink faucets equipped with water-saving devices, such as aerators or spray taps.
- Repairing leaking and dripping faucets and leaking toilets.
- Replacing older toilets with newer, low-consumption toilets.

Outdoor water-conservation tips include:

- Holding back from watering lawns, unless newly seeded (grass often goes dormant --- it does not die --- during dry conditions).
- Limiting vehicle washing.
- Sweeping sidewalks and driveways, rather than washing them.

Pennsylvania's Drought Task Force will meet Friday, April 14 to review the current precipitation numbers and overall status of surface water and groundwater resources.

More information on drought conditions, as well as real-time monitoring of drought indicators, is available on DEP's Web site at www.depweb.state.pa.us, Keyword: "Drought".

Below is a list of Pennsylvania counties and the departure from normal precipitation level for each county over the past 60 days. The departure includes the deficit in inches and a percentage from what is normal for this time of year:

Adams -4.6 inches (51-75%)
Allegheny -3.0 inches (26-50%)
Armstrong -2.8 inches (26-50%)
Beaver -2.5 inches (26-50%)
Bedford -4.2 inches (51-75%)
Berks -4.4 inches (51-75%)
Blair -4.2 inches (51-75%)
Bradford -3.0 inches (51-75%)
Bucks -3.9 inches (51-75%)
Butler -2.6 inches (26-50%)
Cambria -3.5 inches (26-50%)
Cameron -3.0 inches (26-50%)
Carbon -4.1 inches (51-75%)
Centre -3.6 inches (51-75%)
Chester -4.2 inches (51-75%)
Clarion -2.5 inches (26-50%)
Clearfield -2.9 inches (26-50%)

Clinton -3.5 inches (51-75%)
Columbia -3.6 inches (51-75%)
Crawford -2.9 inches (26-50%)
Cumberland -4.2 inches (51-75%)
Dauphin -3.6 inches (51-75%)
Delaware -3.9 inches (51-75%)
Elk -2.7 inches (26-50%)
Erie -2.0 inches (26-50%)
Fayette -3.0 inches (26-50%)
Forest -2.6 inches (26-50%)
Franklin -4.5 inches (51-75%)
Fulton -4.2 inches (51-75%)
Greene -3.2 inches (51-75%)
Huntingdon -4.1 inches (51-75%)
Indiana -3.2 inches (26-50%)
Jefferson -2.3 inches (26-50%)
Juniata -4.3 inches (51-75%)
Lackawanna -2.9 inches (26-50%)
Lancaster -3.3 inches (51-75%)
Lawrence -2.3 inches (26-50%)
Lebanon -3.8 inches (51-75%)
Lehigh -4.6 inches (51-75%)
Luzerne -3.2 inches (51-75%)
Lycoming -4.1 inches (51-75%)
McKean -2.6 inches (26-50%)
Mercer -3.0 inches (26-50%)
Mifflin -4.1 inches (51-75%)
Monroe -4.0 inches (51-75%)
Montgomery -4.2 inches (51-75%)
Montour -3.9 inches (51-75%)
Northampton -4.0 inches (51-75%)
Northumberland -3.7 inches (51-75%)
Perry -4.3 inches (51-75%)
Philadelphia -3.9 inches (51-75%)
Pike -3.9 inches (51-75%)
Potter -2.4 inches (26-50%)
Schuylkill -4.4 inches (51-75%)
Snyder -4.2 inches (51-75%)
Somerset -3.9 inches (51-75%)
Sullivan -4.3 inches (51-75%)
Susquehanna -3.7 inches (51-75%)
Tioga -2.8 inches (51-75%)
Union -4.3 inches (51-75%)
Venango -2.4 inches (26-50%)
Warren -2.1 inches (26-50%)
Washington -3.0 inches (26-50%)

Wayne -3.8 inches (51-75%)
Westmoreland -2.5 inches (26-50%)
Wyoming -4.3 inches (51-75%)
York -3.6 inches (51-75%)

The Organic Way – Crops Grown So Far in the Organically Managed High Tunnels

[Elsa Sánchez](#), [Bill Lamont](#) and [Mike Orzolek](#), Department of Horticulture

On November 5, 2003, we entered the transition phase with the goal of organically certifying four 17 ft by 36 ft high tunnels. We started the transition with a cash crop of four tomato cultivars in 2004. The tomatoes were planted as part of a 2 year study evaluating two fertilization/irrigation regimes (Montri, 2005). The cultivars planted are listed below.

‘Big Beef’ (Johnny’s Selected Seeds, Winslow, ME) is an early to mid season slicing cultivar and an All American Selection. Fruit are large (between 10 to 12 oz), red and globe-shaped. ‘Big Beef’ is an indeterminate cultivar with resistance or tolerance to verticillium wilt, fusarium wilt, root knot nematodes, tobacco mosaic virus, stemphylium wilt, alternaria stem canker and leaf spot.

‘Mountain Fresh’ (Harris Seeds, Rochester, NY) is a late summer slicing cultivar. Fruit are red and large. This is a determinate cultivar with resistance or tolerance to verticillium wilt and fusarium wilt.

‘Plum Crimson’ (Harris Seeds, Rochester, NY) is a plum or saladette cultivar. Fruit are red, medium sized and pear- or plum-shaped. This is a determinate cultivar with resistance or tolerance to verticillium wilt and fusarium wilt.

‘Pink Beauty’ (Johnny’s Selected Seeds, Winslow, ME) is an early to mid season specialty cultivar with medium sized (6 to 8 oz) globe-shaped pink fruit. This is an indeterminate cultivar.

Transplants were grown in greenhouses near the High Tunnel Research and Education Facility. Untreated seed were sown on March 29th in Johnny’s 512 Mix (Johnny’s Selected Seeds, Winslow, ME). Transplants were planted in the high tunnels on May 13th on rows spaced 3.35 ft apart (4 rows in each tunnel) and plants were spaced 1.5 ft within a row. As a standard treatment, water was supplied to the plants using drip irrigation at a rate of 1 inch per week. Two weeks after planting each row was mulched with 6 to 10 inches of straw, in part to suppress weeds.

Nutrients were applied to meet the recommended nitrogen requirement for fresh market tomatoes of 80 to 90 lbs (Orzolek et al., 2005). Compost (1.1% total and organic nitrogen) was soil incorporated prior to planting and, in the standard treatment, Eco-Nutrients Eco-Hydro Fish 2-2-2 (Eco-Nutrients, Inc., Crescent City, CA) was applied at recommended timings (Orzolek et al., 2005).

Pest insects observed included aphids, whiteflies and tomato hornworm. These pests remained below levels thought critical throughout the growing season.

Tomatoes were harvested weekly, as they reached the mature red stage, beginning on July 26th and ending on September 20th. All tomatoes were sorted into marketable and unmarketable categories and ‘Big Beef’, ‘Mountain Fresh’ and ‘Pink Beauty’ were graded.

Tomatoes were grown in 4 different high tunnels in 2005 and data presented are from a combined analysis from 2004 and 2005. Yields were not significantly different between the two fertilization/irrigation regimes used in the study and the tables below are based on analysis combining data from both treatments.

Mean total yield, marketable yield and number of tomatoes per cultivar.

Cultivar	Total Yield (lbs/11 plants)	Marketable Yield (lbs/11 plants)	Number of Tomatoes (#/11 plants)
‘Big Beef’	143.5 _a	104.5 _b	270 _b
‘Mountain Fresh’	137.9 _a	104.6 _b	309 _b
‘Plum Crimson’	149.3 _a	130.7 _a	799 _a
‘Pink Beauty’	113.2 _b	81.8 _c	316 _b

^zValues followed by different letters within a column are significantly different at P≤0.05. Data were analyzed using the Mixed Procedure in SAS Version 9.1 (SAS Institute, Cary, NC) and PDIFF was used to separate significantly different mean yields and numbers of tomatoes. Table adapted from Montri, 2005.

Mean number of tomatoes per grade per cultivar.

Cultivar	Number of tomatoes from 11 plants in each grade			
	US No 1^x	US No 2	US No 3	Smaller
‘Big Beef’ ^y	174 _a ^z	46 _c	37 _b	14 _b
‘Mountain Fresh’	168 _a	64 _b	52 _b	25 _b
‘Pink Beauty’	90 _b	80 _a	92 _a	53 _a

^xUS No 1 = minimum 6.99 cm diameter
 US No 2 = diameter between 6.35 and 7.06 cm
 US No 3 = diameter between 5.72 and 6.43 cm
 US No 4 diameter between 5.40 and 5.79; however, for this study tomatoes with a diameter of 5.79 or less were placed in this category and are labeled “smaller”.

^y‘Plum Crimson’ tomatoes were sorted into marketable and unmarketable categories according to USDA standards for Italian type tomatoes.

^zValues followed by different letters within a column are significantly different at P≤0.05. Data were analyzed using the Mixed Procedure in SAS Version 9.1 (SAS Institute, Cary, NC) and PDIFF was used to separate significantly different mean numbers of tomatoes per cultivar by grade. Table adapted from Montri, 2005.

In 2005 we evaluated the following broccoli cultivars planted as a spring crop.

Cultivars and Seed Sources

Cultivar	Seed Source
'Di Cicco'	Johnny's Selected Seeds (Winslow, Maine)
'Calabrese'	Seeds of Change (Santa Fe, New Mexico)
'Early Green'	
'Nutri-Bud'	

Six-week old seedlings were transplanted on April 6, 2005. Seedlings were planted in a double row with 10 inches between rows and 14 inches between plants within a row. Four beds were planted in each tunnel. Compost and Fertrell Blue N (Fertrell, Bainbridge, PA) were applied at rates of 100 lbs per acre.

The highest yields were from 'Nutri-Bud' plots and the lowest from 'Di Cicco' and 'Calabrese' plots. Higher yields were observed from plots in the middle two beds compared to the outer two beds. This was likely due to microenvironmental differences. In general, 'Early Green' plants were harvested earliest and 'Di Cicco' and 'Calabrese' latest.

The broccoli crop was followed by a trial to evaluate straw, shredded newspaper and newspaper sheets for weed management in a cucumber crop. June 27th 2005, 'Diva' (Johnny's Selected Seeds, Winslow, ME), 'Sweet Marketmore' (Seeds of Change, Santa Fe, NM), 'Lemon' (Seeds of Change, Santa Fe, NM) and 'Prolific' cucumbers (Seeds of Change, Santa Fe, NM) were planted in each tunnel. July 5th, the mulches were applied. The straw and shredded newspaper were applied 2 ft wide and 4 to 6 inches deep. The sheets of newspaper were applied 5 sheets thick. We collected yield and weed data as well as monitored the rate of degradation of the mulches.

The broccoli and cucumber evaluations will be repeated in 2006 and we'll analyze the data and pass on the results after that time.

References:

Montri, A.D. 2005. Evaluating yield of four tomato cultivars under two fertilizer and irrigation regimes during the first year of transitioning to organic production in high tunnels. MS. Thesis. The Pennsylvania State University.

Orzolek, M.D., P.A. Ferretti, W.J. Lamont, Jr., T. Elkner, K. Demchak, E. Sánchez, A. A. MacNab, J.M. Halbrendt, S.J. Fleischer, L. LaBorde, K. Hoffman, G. J. San Julian. 2005. Commercial Vegetable Production Recommendations – Pennsylvania. PSU Extension Publication AGRS-28.

Upcoming Meetings

If you have a meeting you would like to announce, please send the meeting title, date, location and contact information to esanchez@psu.edu.

Local

August 26, 2006. Workshop for Training Master Gardener's on High Tunnel Technology, the Penn State High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA. For more information contact Bill Lamont, wlamont@psu.edu or Becky Grube becky.grube@unh.edu, or George W. Hamilton george.hamilton@unh.edu.

Regional

July 1, 2006. Workshop for Training Master Gardener's on High Tunnel Technology, Woodman Farm, University of New Hampshire, Durham, New Hampshire. For more information contact Bill Lamont, wlamont@psu.edu or Becky Grube becky.grube@unh.edu, or George W. Hamilton george.hamilton@unh.edu.

July 19, 2006. 2006 Vegetable and Small Fruit Field Day, Rock Springs, PA. For more information contact Mike Orzolek at 203 Tyson Bldg, The Pennsylvania State University, University Park, PA 16802 or by phone at (814) 863-2251 or e-mail at mdol@psu.edu.

National

International

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The newsletter is also posted within three days on the Department of Horticulture Vegetable program website at: <http://hortweb.cas.psu.edu/extension/veg crops/newsletterlist.html>.

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