New York Berry News

CORNELL UNIVERSITY

Volume 08, Number 10 October 15, 2009

What's Inside

CURRANT EVENTS

October 30, 2009. *NE IPM Berry Webcast Series #3*: **Strawberry Weed Control: products overview, cultural approaches**. More information: Laura McDermott, lgm4@cornell.edu, 518-746-2562, or go to: http://www.fruit.cornell.edu/Berries/webinarindex.htm.

October 30, 2009. *Erie County Small Fruit Workshop; 12:45 - 4:00 pm; Farm & Home Center*, 21 So. Grove St.; East Aurora, NY 14052. More information: Sharon Bachman, sin2@cornell.edu or 716-652-5400x150.

November 4, 2009. *NE IPM Berry Webcast Series #5*: **Blueberry/Cranberry Weed Management: dodder for cranberries, new approaches to blueberry weed management**. More information: Laura McDermott, lgm4@cornell.edu, 518-746-2562, or go to: http://www.fruit.cornell.edu/Berries/webinarindex.htm.

November 8-10, 2009. *Southeast Strawberry Expo*, Sheraton Imperial Hotel, Research Triangle Park, NC. For information, contact the NC Strawberry Association, phone 919-542-4037, info@ncstrawberry.com.

November 18, 2009. *NE IPM Berry Webcast Series #5*: **Blueberry/Cranberry Disease Management: blueberry viruses, cranberry diseases**. More information: Laura McDermott, lgm4@cornell.edu, 518-746-2562, or go to: http://www.fruit.cornell.edu/Berries/webinarindex.htm.

December 2, 2009. *NE IPM Berry Webcast Series #5*: **Blueberry/Cranberry production: site prep and fertility; blueberry pollination challenges**. More information: Laura McDermott, lgm4@cornell.edu, 518-746-2562, or go to: http://www.fruit.cornell.edu/Berries/webinarindex.htm.

Dec. 7, 2009. *NASGA Annual meeting as part of the Great Lakes Fruit Vegetable and Farm Market Expo***.** DeVos Place Convention Center, Grand Rapids, MI. More information: http://www.nasga.org/.

Dec. 8-10, 2009. *Great Lakes Fruit Vegetable and Farm Market Expo***.** DeVos Place Convention Center, Grand Rapids, MI. For more information www.gleexpo.com.

December 9, 2009. *NE IPM Berry Webcast Series #5*: **Blueberry/Cranberry Insect Management: winter moth, Japanese beetle**. More information: Laura McDermott, lgm4@cornell.edu, 518-746-2562, or go to: http://www.fruit.cornell.edu/Berries/webinarindex.htm.

January 25-27, 2010. *Empire State Fruit and Vegetable EXPO/NYS Farmer's Direct Marketing Association Annual Conference*. OnCenter, Syracuse, NY. Mark your calendars – berry session Wednesday January 27th.

February 2-4, 2010. *Mid-Atlantic Fruit and Vegetable Convention*, Hershey Lodge, Hershey, PA. For more information visit http://www.mafvc.org/html/.

Feb 5-12, 2010. *North American Farmers Direct Market Association 25th Anniversary Convention***,** Lancaster PA. More information to follow.

February 24-26, 2010. *North American Raspberry & Blackberry Conference*, Monterey, California, preceded by preconference tour. More information: http://www.raspberryblackberry.com/.

June 22-26, 2011. *10th International Rubus and Ribes Symposium, Zlatibor, Serbia***.** For more information contact: Prof. Dr. Mihailo Nikolic, Faculty of Agriculture, University of Belgr, Belgrade, Serbia. Phone: (381)63 801 99 23. Or contact Brankica Tanovic, Pesticide & Environment Research Inst., Belgrade, Serbia. Phone: (381) 11-31-61-773.

BERRY WEBINAR SERIES CONTINUES THIS FALL AND WINTER

The Cornell University Berry Program continues to host a series of Webinars for Berry farmers, supported by funding from the Northeastern Integrated Pest Management Center (NEIPM). The webinars feature experts from eastern North America speaking on production and pest management topics and their current related research.

All Webinars are scheduled for 1:00pm so berry growers can enjoy hearing these live presentations in the comfort of their home or office while they eat lunch! Speakers will answer questions live during and after the presentation.

All webcasts will be recorded and archived at: http://www.fruit.cornell.edu/Berries/webcastarchive.htm.

Participation is easy; all you need is a high-speed internet connection and a web browser. Participants will connect to a secure Cornell Cooperative Extension server to join the presentation.

Don't have high speed internet access or a home computer? Participate in the webcasts at a group location. Options for attending a group session at extension offices across the region are being arranged, so check the website to find a location near you, or call your local extension office and see if they can arrange a viewing.

The webcasts have been divided into 3 mini series focusing on major berry crops: Strawberries, Blueberries/Cranberries and Brambles with 4 presentations for each crop group. The entire schedule follows. If you have missed a topic of interest, just check the website and view the archived webcast.

There is no charge for webcast participation, but registration is required. Connection details are sent to registered participants the day prior to the event. Connections for each webcast are limited, so register now by contacting Laura McDermott, lgm4@cornell.edu or calling 518-746-2562.

For additional program details and other information: http://www.fruit.cornell.edu/Berries/webcastindex.htm.

Future Programs

Friday, October 30, Strawberry Weed Management, Dr. Robin Bellinder of Cornell University presents an *Overview of weed control products for strawberries* and Dr. Marvin Pritts of Cornell University discusses *Cultural approaches to weed management.*

Group viewing sites for this webcast: (click link to register
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua (Mayville) by phone Virginia Carlberg, 716-664-9502 ext 202, CCE Erie County, by phone, Sharon Bachman, 716-652-5400 ext 150.
NH: Grafton County UNHCE, by phone Heather Bryant at 603-787-6944.

Wednesday, November 4, Blueberry/Cranberry weed management, Hilary Sandler of the University of Massachusetts will discuss *IPM Techniques for Dodder in Cranberries*, and Dr. Eric Hanson of Michigan State University will present *New Approaches to Blueberry Weed Management.*

Group viewing sites for this webcast: (click link to register)
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202, NYSAES Geneva, NY, by phone, contact Cathy Heidenreich 315-787-2367.

Wednesday, November 18, Blueberry/Cranberry Disease Management, Dr. Annemiek Schilder, of Michigan State University, speaks about *Understanding and Managing Blueberry Viruses* and Dr. Frank Caruso of the University of Massachusetts talks about *Important Cranberry Diseases in the Northeast.*

Group viewing sites for this webcast: (click link to register)
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202, NYSAES Geneva, NY, by phone, contact Cathy Heidenreich 315-787-2367.

Wednesday, December 2, **Blueberry/Cranberry Production Topics,** Dr. Gary Pavlis of Rutgers University will speak on *Blueberry Site Preparation and Fertility Considerations* and Sonia Schloemann of the University of Massachusetts will speak on *Overcoming Blueberry Pollination Challenges*

Group viewing sites for this webcast: (click link to register)
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202, NYSAES Geneva, NY, by phone contact Cathy Heidenreich 315-787-2367.

Wednesday, December 9, Blueberry/Cranberry Insect Management, Dr. Roger Williams of Ohio State University will discuss *Japanese Beetle Management* and Robert Childs of the University of Massachusetts will talk about *Winter Moth: A New Blueberry Pest.*

Group viewing sites for this webcast: (click link to register)
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202, NYSAES Geneva, NY, by phone, contact Cathy Heidenreich 315-787-2367.

Wednesday, January 6, 2010 Bramble Production Topics, Dr. Marvin Pritts from Cornell University will present *Growing Brambles in High Tunnels* and Dr. Fumiomi Takeda of the USDA research station in Kearneysville, WV will present his work on the *Rotating Cross Arm Trellis for Brambles.*

Group viewing sites for this webcast: (click link to register)
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202.

Wednesday, January 20, 2010, Bramble Weed Management, Dr. David Handley of the University of Maine will discuss the *Cultural Weed Control Options for Brambles* and Dr. Rich Bonanno of the University of Massachusetts will instruct growers on *Using Herbicides Effectively in Bramble Plantings*.

Group viewing sites for this webcast:
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202.

Wednesday, February 3, 2010, Bramble Diseases, Dr. Pam Fisher of the Ontario Ministry of Agriculture in Canada will discuss *Controlling Root and Crown Diseases in Brambles* and Dr. Kerik Cox of Cornell University will speak on *Managing Bramble Viruses*.

Group viewing sites for this webcast:
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202.

Wednesday, February 17, 2010, Bramble Insects, Dr. Hannah Burrack of the University of North Carolina will talk about *Controlling Crown and Cane Borers*, TBA

Group viewing sites for this webcast:
NY: CCE Oneida County, to register by phone: Jeff Miller, 315-736-3394 ext 120, CCE Chautauqua, by phone Virginia Carlberg, 716-664-9502 ext 202.

Archived Programs

Strawberry Production Topics, Dr. Lewis Jett of University of West Virginia presents Growing *Strawberries in a High Tunnel* and Kathy Demchak of Pennsylvania State University presents *Growing Strawberries on Plastic in the Northeast*

Strawberry Insect Pests, Dr. Richard Cowles of the Connecticut Agricultural Experiment Station discusses *Management of Black Vine Weevil in Strawberries* and Dr. Greg Loeb of Cornell University speaks on *Managing Sap Beetle & Tarnished Plant Bug in Strawberries*

Strawberry Disease Topics, Dr. Mike Ellis of Ohio State University discusses *Management of Fruit Diseases* and Dr. David Gadoury of Cornell University presents *Strawberry Powdery Mildew Management***.**

MARKETS ARE CHANGING FOR BERRY CROPS

Steven A. McKay, Extension Educator, Hudson Valley Fruit Program, Columbia County CCE, Hudson, NY

As few as three to five years ago, berries were viewed in the Northeast as less common crops with the potential for high returns. Direct marketers such as CSAs (community supported agriculture) and vendors in green markets who produce only what they can sell directly, continue to enjoy high retail prices for the fruit, thus making a profit on a small scale. On the other hand, middle-sized to larger-sized growers selling to wholesale distributors have been disappointed by their returns recently, and have found that wholesale prices often don't even pay the costs to get fruit to market (ie: harvest, packaging material, transportation, commissions). This has made larger growers take a second look at their berry enterprises and consider alternatives. Mechanization, processing, and adding value to the berries provide some options to explore.

CSA's are organized as groups that pay a set price for weekly delivery of produce. A few Columbia County growers worked with these organizations early in the season this year when little local fruit was available. July is berry and cherry month in New York, and there is no other local competing fruit then. The growers were able to move decent commercial quantities of strawberries, currants, gooseberries, and raspberries then. The main challenge was maintaining quality as fruit passed in and out of coolers, and was jostled around. Direct marketers in the green markets have similar luck. As shoppers look for local fruit, their option is berries in July, so the berry sellers have a captive audience.

Unfortunately, as berries become plentiful on the market, the wholesalers become saturated with product. Prices drop as product arrives from the west coast and as the season peaks. As an example, flats of half pints of raspberries can open the season with prices as high as $28 on the wholesale market, and drop as low as $7.50 in a couple of weeks. Black raspberries used to command prices as high as $45 per flat of half pints, and now can drop as low as $12. Red currants start at $28, and commonly drop to $15 near season's end. At the same time, prices for some of the primary processed products have climbed. As an example, raspberry concentrate has gone from about $35 per gallon to $125 per gallon in a couple of years. Elderberry concentrate is similar with prices climbing to as high as $55 to $85 per gallon.

So, what are the larger producers to do to stay in business? One alternative would be to develop other markets around the US where berries can't be grown but have possibilities for fresh market. The southern states come to mind as possibilities, as well as parts of the mid west. Good coordination and handling procedures for product movement would be needed to maintain quality. Professional packaging is necessary for aesthetics in markets, and to help withstand handling. Storage needs careful planning because low temperatures are required, and movement in and out of refrigeration causes damaging condensation on berries.

Mechanizing and producing for processing is another option that needs to be explored for the northeast. As the nutritional benefits of berries continue to be discovered and shared with the public, demand for both fresh and processed product will increase. Many of these crops such as currants, gooseberries, raspberries, blueberries, and aronia are very adaptable to mechanized culture and harvest. Planting, weeding, pruning, and harvest can be done from the seat of a tractor. New equipment and infrastructure is necessary for this type of production. In addition to machinery for production, freezers, processing facilities for cleaning, juice extraction, and packaging become critical. Sufficient planting is necessary to have a level of production that can support the investment.

On February 26, 2010, Cornell Cooperative Extension will be having a meeting in Kingston to explore these alternatives. If you would be interested in attending, please call Peggy at 518-828-3346 and leave your name and phone number. We will be announcing details as the meeting develops.

NY Beginning Farmer Project

Support for new and diversifying farmers

Cornell Cooperative Extension Associations of Allegany, Cattaraugus, Chautauqua, Erie and Wyoming Counties Present

High Tunnel Fruit and Vegetable Production

Saturday, October 24th
Franciscan Sisters of Allegany
St. Elizabeth Motherhouse
115 E. Main St., Allegany, NY 14706
9:00am to 2:00 PM

High tunnels are low-cost, passive, solar greenhouses that use no fossil fuels for heating or venting and can provide many benefits to horticulture crop producers. A High Tunnel is a greenhouse-like structure which modifies the climate to create more favorable growing conditions for plants. Commercially available High Tunnels are on the market in numerous widths and lengths. Many warm-season (frost-sensitive) fruit and vegetable crops can be grown in a high tunnel.

This workshop will cover the advantages and disadvantages of high tunnels; tunnel selection, installation and management; plant recommendations and sources of information. Presenters will include Cornell University Staff and Grower(s) currently using high tunnel production as part of their farming enterprise. More sessions will be inside followed by afternoon farm visit. Please dress for inclement weather as farm tour will be held rain or shine.

Enrollment will be limited. **Pre-registration is required by October 20th, 2009**. Cost for the workshop is $40/individual or farm enterprise which includes morning refreshments and course materials. **Participants should bring a bag lunch**. For more information contact Lynn Bliven at (585) 268-7644 ext. 18. Mail registration form to: Attn: Lynn Bliven, CCE Allegany County 5435A County Rd 48 Belmont, NY 14813. For persons with disabilities requiring accommodations, please contact Lynn Bliven at 585-268-7644 ext. 18 by 5:00 pm on October 20, 2009.

Building Strong and Vibrant New York Communities

Cornell Cooperative Extension provides equal program and employment opportunities.

High Tunnel Fruit and Vegetable Production

Pre-registration Form

Name(s)_____

Address_____

City_____ Zip Code_____

Daytime Phone_____Email_____

Total Enclosed $_____ (_____@ $40/individual or farm enterprise)

Make checks payable to: Cornell Cooperative Extension For persons with disabilities requiring accommodations, please contact Lynn Bliven at 585-268-7644 ext. 18 by 5:00 pm on October 20, 2009.

CHAUTAUQUA COUNTY GROWERS BENEFIT FROM COMBINATION OF NON-TRADITIONAL AND TRADITIONAL APPROACHES TO BERRY PROGRAMMING

Virginia Carlberg, Extension Educator, Chautauqua CCE, Jamestown, NY

Jamestown, NY- Cornell Cooperative Extension of Chautauqua County recently hosted a successful berry program on September 9, 2009. The daytime event started at 12:45pm at the Jamestown Community College Dunkirk Conference Facility. The group participated in an online webinar (the live presentation was projected on to a large screen) on strawberries; one of the first in a series of webinars on selected fruit crops. The expert presenters were Dr. Lewis Jett, West Virginia State University; and Ms. Kathy Demchak, Penn State University. Dr. Jett spoke on growing strawberries in high tunnels, while Ms. Demchak talked about northeast approaches to growing strawberries on plastic. Both speakers answered questions during and after their live presentation.

Cornell Cooperative Extension educator, Virginia Carlberg, believes that webinars are a valuable tool for groups of agricultural producers because it allows for interaction with experts from across the country for a very low cost. Although participants with internet access can view the webinar from the comfort of their own home, group viewing sessions can be particularly valuable because the presentation often stimulates discussion amongst attendees.

Cathy Heidenreich, Western New York Berry Specialist from Cornell University's Department of Horticulture, joined the group as a resource both at the webinar and at the farm. Participants were able to ask Ms. Heidenreich questions about berry varieties, diseases, strawberry production practices, and Cornell guidelines.

Following the presentation, the 22-participant group drove to The Berry Bush, a local berry farm, in Forestville, NY. Bob and Judy Militello, and son James, own and operate The Berry Bush under Militello Farms, LLC. The Militellos grow red and black raspberries, blackberries, blueberries, and strawberries. They also grow 260 acres of Concord and Niagara grapes. Their berry operation will be celebrating their 50th year of operation next year, and is one of the first farms in Chautauqua County to offer customers u-pick Red Raspberries.

The Berry Bush sells their berries through on-farm retail (both fresh-picked and u-pick) and wholesale outlets. Bob shared that The Berry Bush is experimenting with sales of jams made from their own berries. They have also started to freeze fresh berries in pre-measured bags. They have found that families will purchase frozen berries to make pies, sauces, or jams.

Bob led discussions on a variety of topics, including: renovating and planting fields to new crops, drip irrigation, crop rotation, marketing, and general business operations. Small group discussions and farm tours continue to be an excellent

way to provide local and commercial growers, and berry grower beginners, an opportunity to learn about best practices in managing their berry crops.

The first small berry meeting offered to Chautauqua County growers was held on October 1st of 2008. "Based on that success and the number of small berry growers in the area, I thought it would be beneficial to continue these meetings on an annual basis," Carlberg said. "This year's program was also a success and I expect to do an on-farm tour again in the fall of 2010. We are also holding group viewing sessions for the remainder of the Small Berry Webinar series throughout the fall and winter. I would like to thank Cathy Heidenreich for coming out to Chautauqua County to lend us her expertise. She, and the rest of the berry team at Cornell, is an extremely valuable resource for berry growers in New York State."

BLUEBERRY VIRUS DISEASES POSE MAJOR THREAT: GROWERS ADVISED TO STAY ALERT

Laura McDermott, Capital District Vegetable and Small Fruit Program, Washington CCE, 415 Lower Main Street Hudson Falls, NY 12839

One of the pleasures of growing highbush blueberries has been that once the unique soil and nutritional requirements are satisfied and the birds are successfully deterred, the rest of the production process is relatively straight forward. Blueberries, relative to the other berry crops, have a small pest complex to deal with. But that may change soon.

Michigan State University has confirmed that Blueberry Scorch Virus and Blueberry Shock virus have been found in several different commercial plantings located throughout the state including the University research station. Prior to 2009, these two exotic viruses had been found in New Jersey and the Pacific Northwest, but not in the mid-west or New England.

Because these diseases are caused by viruses, the management protocol is removal of plants. The finality of that statement will hopefully catch the attention of all blueberry growers in New York, so that we can do everything possible to prevent the spread of these extremely damaging plant diseases.

Blueberry scorch virus can cause sudden and complete collapse and death of flowers and leaves in addition to twig dieback (*top left*). Some cultivars also show marginal leaf necrosis (*below left*). Severe infections will kill the bush outright.

The dieback looks very similar to what you would expect from spring frost injury. The tricky part of this disease is that some plants will remain symptomless but will act as "carriers" of the virus. Aphids act as primary vectors and the movement of aphids can be assisted by mechanical harvesting equipment. Because the symptomless bush remains in the planting, the disease continues to spread. A slightly different strain of blueberry scorch virus causes Sheep Pen Hill disease that has been found in New Jersey.

Blueberry shock virus causes symptoms similar to blueberry scorch, but unlike scorch, a second flush of growth occurs causing the plants to appear normal except for lack of fruit – again similar to frost damage (*right –shock infected bush with necrotic leaves*). Infected bushes may exhibit symptoms for up to 4 years and then become symptomless. Fortunately, infected plants, if they are well managed, can recover from this virus and become productive again. Blueberry shock virus is pollen born and carried by bees which transmit the disease in a radial pattern as they forage. Infection only occurs during bloom, but again, symptomless plants remain a source of infection.

To best manage these viruses you will need to make good decisions when selecting stock. Plant only certified, virus-tested clean stock. Do not establish new plantings adjacent to infected fields and do not use planting stock from fields that may be infected or in remission. **Remove and destroy infected bushes before bloom.**

Dr. Annemiek Schilder, who has been leading the virus survey effort in Michigan, will

be speaking about these diseases on Wednesday, November 18th at 1:00 pm as part of the NE IPM Berry Webinar series.

For more information about this series, please visit
http://www.hort.cornell.edu/extension/commercial/fruit/Berries/webinarindex.htm

or contact Laura McDermott at lgm4@cornell.edu or 518-746-2562. The webinars are free, easy to view and could make a very big difference in your business.

For additional information on these viruses, visit these Michigan State fact sheets:
• Blueberry shock: http://www.blueberries.msu.edu/shock.htm
• Blueberry scorch: http://www.blueberries.msu.edu/scorch.htm

(Article reprinted with permission from: Capital District Vegetable and Small Fruit Weekly Update, Vol. 1, No. 17, October 8, 2009. Photos courtesy of MSU Blueberry Facts website: http://www.blueberries.msu.edu.)

AGRICULTURE SECRETARY VILSACK ANNOUNCES FUNDING FOR RESEARCH ON FOOD SECURITY IN NORTHEAST

Sandy Miller Hays, ARS News Service, Agricultural Research Service, USDA, (301) 504-1638, sandy.millerhays@ars.usda.gov.

WASHINGTON, Sept. 17, 2009--Agriculture Secretary Tom Vilsack today announced $230,000 in funding for studies to assess the capacity of the northeastern United States to produce enough food locally to meet market demands, rather than relying on food transported long distances to feed the burgeoning East Coast population. These studies will be conducted as part of the "Know Your Farmer, Know Your Food" initiative launched this week by USDA to connect people more closely with the farmers who supply their food, and to increase the production, marketing and consumption of fresh, nutritious food that is grown locally in a sustainable manner.

"This research project will help identify and quantify the capacity to produce food locally that meets the needs of large urban populations in different seasons of the year," said Agriculture Secretary Vilsack. "The lessons that we learn and the information that we glean from this project also will give us important insights into how we build and sustain local production systems elsewhere in the United States and abroad."

The Agricultural Research Service (ARS), USDA's principal intramural scientific research agency, will provide $200,000 in additional funding to its laboratories in Orono, Maine, and Beltsville, Md., to hire two scientists to model and determine the suitability of East Coast soils for agricultural production, as well as land availability in the Northeast for local production of fruit and vegetables.

ARS is also providing $30,000 to Tufts University in Boston, Mass., for a new cooperative agreement to conduct an assessment of marketing and processing options for local food production, and also to determine how land-use policies could further encourage such production.

Although low fuel prices have contributed to the globalization of the U.S. food system, with food transported to market over long distances, the ARS scientists contend that relying more on the strategic production of locally grown food can counter the challenges of rising transport costs, growing population demands and vanishing farmlands.

ARS scientists at the Orono and Beltsville laboratories are mapping an array of county-level data from Maine to Virginia on factors such as weather, soil, land use, water availability, which they will use to model potential crop production along the Eastern Seaboard to find out where local food production could meet current and projected demand, and where it might fall short.

In addition to the work conducted at the Orono and Beltsville laboratories, ARS' laboratory at University Park, Pa., is participating in the research. Two other USDA agencies--the Economic Research Service and the Agricultural Marketing Service--will also participate in this project. The team is modeling actual crop production practices and the flow of agricultural products into supply chains, including all the associated handling and transportation costs, from farm field to market. This will help identify how the costs and benefits of locally grown produce compare with product transported over long distances to the Eastern Seaboard market.

ARS funded cooperative research agreements in 2008 totaling $47,000 with university partners at Tufts University and the Massachusetts Institute of Technology to develop databases on local production and consumption of 130 agricultural products, and to assess cost-effectiveness of government conservation programs on organic dairy production. Other research partners in this work include Pennsylvania State University, Cornell University and Iowa State University.

MASSACHUSETTS CRANBERRY GROWER WELCOMES CCE AND THE PUBLIC TO A FIELD MEETING AT HIS NORTHERN NEW YORK FARM

Richard Gast; Programs Assistant, Horticulture/Natural Resource,s Cornell Cooperative Extension Franklin County, Malone, NY

On September 19th, more than 40 people from across the North Country and beyond joined Berry Extension Support Specialist Cathy Heidenreich and me for a close-up look at some very exciting work being undertaken at a site near the hamlet of Bombay, in northwestern Franklin County, NY. In recent years, Peter Paquin, an experienced Massachusetts cranberry grower, has been expanding his operation and is now growing cranberries in the North Country. Once his project is completed, he will have converted 67 acres of former hayfield in the town of Brasher into cranberry production.

I found Mr. Paquin, a native of Cape Cod, Massachusetts, to be knowledgeable, hard-working, friendly and remarkably down to earth. The 30-year veteran cranberry grower, who currently has about 50 acres at his northern New York farm in various states of production, believes that conditions in this remote dairy farming region may, in fact, be better for growing cranberries than those on his Cape Cod farm.

The morning had the feel of early fall. It was noticeably cool, with temperatures in the mid-40s. The leaves were changing color. Trees were bathed in shades of yellow, orange, red, and even purple.

As the meeting got underway, Mr. Paquin welcomed the excited crowd and then showed us some of the equipment that he uses to make his bogs, to plant, fertilize and irrigate his cranberry vines, and to harvest the bounty of plump, ripe cranberries.

Mr. Paquin explained that the soils at his Bombay farm are heavy clay soils that naturally impede the vertical movement of water and that the base layer for cranberry bogs must be clay or another impermeable material, such as peat or densely packed topsoil so the bogs can be flooded for harvest and for winter protection.

He described how, once a site is leveled, 6 to 8 inches of sand are placed on top of the clay base layer, and explained that the sand layer must provide sufficient drainage for proper aeration, root development and prevention of Phytophthora root rot. He went on to say that he trucks sand from a pit located on property that he owns in South Bombay, approximately 10 miles west of the farm, and added that soil pH should range between 4.0 and 5.0 and that, since the sand that he is using does not fall into that range; sulfur is added to make the adjustment.

Paquin noted that he uses unrooted cuttings, which he gathers from already producing bogs, when planting. He uses a planting machine and a weighted roller to set the cuttings at a density of between 1 and 1.5 tons of cuttings to the acre. According to Paquin, the cuttings will root easily and, if properly watered, each stem will produce up to 200 uprights per square foot. If everything has been prepared correctly and the vines are properly cared for, new plantings will need to grow for about three years before they will bear harvestable fruit. Full production should not be expected, however, until the fourth year. Once established, the bog will produce fruit indefinitely.

At the end of the first year, the vines should be well-established, with foot-long runners and well-developed, healthy, functional root systems. Coverage will improve in the second year and, by the end of that growing season, it may be necessary to apply a light covering of sand to secure the vines before the bog is flooded for winter. In late spring or early summer of the third year, the vines should begin to develop flowers. From full bloom, it will take nearly three months for the berries to reach maturity. Sprinklers are used to protect the vines whenever a frost is expected.

Mr. Paquin uses flooding to harvest his berries in mid-October. Flooding can be used only when the harvested cranberries will be marketed for processing into juice, sauce, relish, concentrate, medicinal powder, etc. (Fresh market berries are dry-harvested, using tools similar to blueberry rakes.) Flooding causes the fruit-bearing vines to rise. A harvester then stirs the water in the flooded bog with enough force to dislodge the ripe berries. Air pockets in the berries cause them to float to the surface. They are then moved to one end of the bog, where they are pumped into waiting trucks and hauled away.
Once the harvest is completed, plant debris (leaves, twigs bruised berries), which is a potential source of disease and insect habitat, can be skimmed from the bog and disposed of. It may be necessary to flood the bog a second time to do this.

To ensure that only top quality berries are marketed, they are then run through a separator or bounce machine. As the

berries are dropped into the separator, plump, firm berries will bounce over wooden barriers into storage bins and / or shipping crates. (The air pockets that make them float also make them springy.) Berries that are not firm enough to bounce drop down into trash bins and are discarded. Berries are used for processing can then be frozen until they are needed.

Paquin's bogs will again be flooded on or before December 15th, once the winter has set in. About a month later, the excess water will be drained off, leaving the vines protected under an 8-inch layer of ice. This flooding process is not necessary in parts of the state where growers can rest assured that their vines will remain under a consistent 8-inch layer of snow. But should the vines become exposed, due to a mid-winter thaw, they will die.

Paquin likes to joke that growing cranberries is better than growing corn! He asserts that cranberry production is more profitable than anything else that he knows of. He says that an established bog will produce about 20,000 pounds of cranberries to the acre and expects his crop to bring about 50 cents per pound, this year. Last year, he received 85 cents, an exceptionally good price.

Cranberries are one of only three commercially grown fruits native to North America. The other two are blueberries and concord grapes. The State of Massachusetts produces about 40 percent of the nation's cranberries. They are that state's number one agricultural crop.

MULCHING STRAWBERRIES FOR WINTER PROTECTION

Rich Marini, Department of Horticulture, Penn State University

Mulching strawberries is an old practice that helps protect the plants from low temperature injury during the winter and keeps the ripening fruit clean. This summer Kathy Demchak and I observed winter injury in the crowns of plants in strawberry fields that were not mulched until mid-winter. Although few plants were killed, the injury appeared severe enough in some plants that yield was probably reduced. For strawberries grown on raised beds, the potential for cold injury is high because soil heat may quickly dissipate from the increased surface area of the beds relative to the soil volume. Covering raised beds with plastic or row covers likely retards heat loss, but I am not aware of soil temperature data for raised beds with different types of covers. This article is intended as a review of the information on mulching strawberries and on low temperature injury, so growers understand how and when to effectively mulch their plantings.

In the late summer and early fall, strawberry plants enter a physiological stage referred as “dormancy”. There are different phases of dormancy, but that discussion is beyond the scope of this article. Although dormant plants do not appear to be growing, the buds continue to develop throughout the winter. The initial stages of dormancy are triggered by decreasing day length and declining temperatures, but strawberry plants do not become hardy until November. The term “hardiness” refers to the plant’s ability to resist low temperatures. As strawberry plants become dormant, new leaf development ceases, the leaf petioles become more horizontal, resulting in the “flattened” appearance of dormant plants, and older leaves turn red. Plants become hardy upon exposure to freezing temperatures and strawberry plants continue to increase in hardiness until January. In late winter, after being exposed to sufficient chilling, the plants start to lose cold hardiness in response to warming temperatures. Upon exposure to sufficient heat, the plants begin to grow.

Mulch should be applied after the plants have attained substantial cold hardiness, but before low temperatures injure the plants. A rule of thumb, supported by research data from several locations, is to apply mulch after three consecutive days when the soil temperature is 40°F or lower at a 4-inch depth. This usually occurs after several hard frosts in the low 20’s, and in Pennsylvania this usually occurs between mid-November and mid-December, depending on location.

Strawberry plants are covered with straw to insulate plants from low temperatures, to prevent temperature fluctuations that can lead to frost heaving, and to minimize plant desiccation. Mulch also delays soil warming in the spring and minimizes exposure to spring frost by delaying bloom. Following bloom, mulch helps with weed control, conserves soil

moisture, and helps keep fruit clean. Several types of loose materials have been successfully used as mulch, but straw is most common in the northeastern U.S. Hay should be avoided because it contains weed seeds. For matted rows, about 2.5 to 3 tons of mulch per acre, providing a 2- or 3-inch-layer, is typically applied on top of the plants. Doubling this amount of mulch is typically suggested for raised beds. Snow is an excellent insulator and snow combined with mulch is even better. My Master's research at the University of Vermont involved laboratory experiments where plants were exposed to various temperatures to determine critical temperatures for plant growth, as well as survival of plants and flower buds. In a field experiment non-mulched strawberry plants were compared with mulched plants. When the air temperature was -4°F, the temperature of non-mulched crowns was 1.5°F but the temperature of crowns under straw mulch plus 8" of snow was 30°F.

Mulch is typically removed in early spring when plants begin to show signs of growth or new leaf emergence under the mulch. Earlier mulch removal will allow the soil to warm, resulting in earlier plant growth and bloom, which is susceptible to spring frost. The mulch should be removed with rakes or pitch forks in small plantings or with various types of mechanical rakes in larger plantings. A little mulch should remain on the plants and this will work its way to the soil surface to help keep fruit dry and clean, but most of the mulch is pull to the row middles for weed control.

More on winter injury

The cold hardiness of strawberry plants varies with cultivar and weather conditions before and during a cold event. Dormant plants will lose some of their hardiness if exposed to warm temperatures for just one or two days. Rapidly declining temperatures are more injurious than gradually declining temperatures.

A strawberry crown is actually a short stem. The tissue in the crown center (the pith) is called the medulla and is storage tissue composed of unspecialized cells called "parenchyma". To the outside of the medulla is the vascular cambium. The vascular cambium is a bright white thin layer of tissue forming a cylinder running the length of the crown. The cambium is responsible for the horizontal growth or thickening of the crown. The cambium produces xylem cells to the inside that act as a pipeline to allow water to flow from the roots to the leaves, runners, flowers and fruit. The cambium produces phloem cells to the outside, which allows for the vertical movement of sugars and other materials within the plant. The tissue at the base of the medulla is most sensitive to low temperature injury and the cambium tissue is most tolerant to low temperatures. Tissue browning in the crown is indicative of low temperature injury. As injury increases, browning extends from the base to the top of the medulla and the browning becomes darker. Often the entire medulla can be chocolate brown, but as long as most of the cambium is white, the plant will survive. However, when the lower half of the medulla was dark brown, yield was reduced by about 45% compared to non-injured plants and this occurred when crowns were exposed to about 18°F. About 50% of the plants were killed by exposure to 14°F. The effect of freezing 'Catskill' strawberry plants to various temperatures on subsequent growth and fruiting is summarized in Table 1.

Table 1.Temperatures needed to influence different aspects of 'Catskill' growth and development.

Response	Maximum temp (°F) that caused response
Crown tissue browning	17
5% plant mortality	17
50% plant mortality	14
Reduced leaf emergence	24
Reduced leaf size	10
Increased runner production	17
Reduced bloom	17
Reduced plant dry weight	10

Some of the older cultivars, such as 'Catskill' and 'Sparkle' were quite tolerant of low winter temperatures, but to my knowledge the newer cultivars have not been evaluated for cold hardiness. Kathy Demchak had a small 2-year-old cultivar trial on plasticulture at Rock Springs that was not well mulched with straw last winter, but were covered with only row covers. So I evaluated them for crown injury and some of the results are shown in Table 2. Each branch crown on 5 plants in 4 replications was cut longitudinally and the percentage of the medulla with brown color was recorded and the darkness of the brown color was rated on a scale of 1 (no browning) to 3 (very dark brown). I had never evaluated cold injury in older plants with multiple crowns. These plants had between 4 and 9 crowns and I was surprised to see that the center crown, associated with the original mother plant, was most sensitive to cold injury. There was no plant mortality for 'Evie 3', whereas 'Albion' and 'Seascape' had the most crown mortality with 7% mortality. Browning of the original crown and the branch crowns was not very strongly related. For the original crown, 'Everest' had the most browning, whereas a selection from North Carolina State University and 'Evie 3' had the least tissue browning. For the branch crowns, 'Seascape' had the most injury and 'Everest' had the least injury. Kathy set out some extra plants for me this spring and this winter I hope to evaluate the cold hardiness of some of these cultivars using controlled freezing techniques.

Table 2. Severity of oxidative browning of crown tissue in six strawberry cultivars in 2009. Percent browning refers to the average extent (%) of the crown tissue that was brown.

Cultivar	Original crown		Branch crown		Live original crowns (%)
	Medulla browning (%)	Brown rating	Medulla browning (%)	Brown rating	
Albion	74	2.5	21.6	1.3	93
Evie 2	72	2.2	34.7	1.2	98
Evie 3	32	1.7	14.3	0.5	100
Everest	80	2.3	7.3	0.7	94
NCSU selection	30	1.3	10.9	0.5	95
Seascape	73	2.6	43.8	1.6	93

STRAWBERRY CULTIVAR WINTER INJURY - A RESEARCH BRIEF

Cathy Heidenreich, Berry Extension Support Specialist, Department of Horticulture, Cornell University CALS, Ithaca, NY 14853

Strawberry winter injury is one possible culprit for this spring's poor strawberry plant survival. Calls were received from across the state regarding first and second year plantings that appeared healthy going into winter but came out from under straw cover with thin plant stands and dead daughter plants. 'Allstar' was one of half a dozen or so cultivars that appeared seriously affected.

A recent report was published on strawberry cultivar winter injury in Minnesota. The research brief that follows is a summary of the findings presented. For those wishing to read the article in its entirety, a full citation follows the brief that provides author names, article title, and source.

Cold Weather a Limiting Factor

Authors of this report point out in their introduction that the limiting factor for strawberry production in northern growing regions is cold weather. Winter mulch is usually applied in northern areas where snow cover is areas intermittent or lacking to protect plants from winter injury. Previous research has been done to examine the effectiveness of different types of mulch material.

New cultivar releases pose a risk for northern growers as their cold hardiness remains unknown for the most part. Cultivar cold hardiness is not as easily evaluated as a more intrinsic characteristic such as productivity. Several types of artificial cold test methods have been employed to predict strawberry cold hardiness but these have not proven to be as effective in predicting cold hardiness as evaluations of field survival under various field conditions.

Winter conditions at the Minnesota North Central Research and Outreach Center in Grand Rapids Minnesota (USDA plant hardiness zone 3b) make it an ideal location for evaluation of cold hardiness in horticultural crops.
Relative cold hardiness and performance of 15 strawberry cultivars was evaluated under field conditions for Winter 2005-2006, and Winter 2006-2007 (no snow cover). The experiment was conducted as part of the hardy strawberry breeding/evaluation program at the Center.

Evaluation Methods

Cultivars were planted in a randomized complete block design to minimize variation between plots. Each cultivar plot was replicated 3 times in the experiment. Bare root plants were provided from a single U.S. nursery with the exception of 'AC Wendy', supplied by a Canadian nursery. Each cultivar plot consisted of 2 side-by-side rows (sub plots) of 6 plants each. Plant spacings were 18 inches in-row with 4 feet between rows. Plants were established in spring 2005 and allowed to form matted rows. One row (subplot) of each cultivar was mulched for the winter with approx. 4 inches of wheat straw; the adjacent subplot was not. Mulch was applied in mid November and removed to between-row in late April, depending on weather conditions. Between-row mulch was also applied in late April to non-winter mulched plots.

Fruit was harvested from plots in 2006 and 2007. Data collected included total yield, mean berry weight (25 fruit), and plant stand (visual estimate of % leaf coverage for plot) in fall before mulching and again in summer during harvest. Other data measured included air and soil temperatures for winter 2005-2006 and 2006-2007 using 4-channel HOBO data loggers. Two replicates each were collected from mulched and unmulched treatments for air, ground (soil surface) and 2.0 and 3.9 inch soil depths.

Plants were renovated by flame burning old leaves and narrowing rows by tilling after harvest (July 2006). Insecticides were used to control tarnished plant bugs each year; no other pesticides were used in the experiment.

Overhead irrigation was used as necessary during the growing season to maintain soil moisture. No frost protection was provided.

Results and Conclusions

All cultivars established matted rows well in 2005 with the exception of 'AC Wendy', 'Winona' and 'Annapolis. Quality of nursery plants was the probable cause for this variation.

Soil temperatures were colder in 2007 than 2006. Temperature observations of note are recorded in Table 1 below. Temperature threshold for injury was not determined, but relative cold hardiness of cultivars was observed under conditions where mulch and snow cover were able and unable to mitigate cold temperature effects.
While temperature fluctuation plays a role in winter injury, it appears depth and duration of cold temperatures during the mid-winter period is perhaps the critical factor in plant survival. The effect of this factor is even more severe during open winters without snow cover.

Table 1: Temperature observations of note recorded in the experiment

Date	Data collected	Observations
February 2006	daily minimum soil temperature at 3.9 inches	Remained constant at 30 to 31.5 °F (28 °F lowest recorded temp) on both mulched and unmulched plots. Average snow cover 8-12 inches.
Jan- Feb, 2007	daily minimum soil temperature (average)	5.4 °F lower in unmulched plots vs. mulched plots
January 16, 2007	Daily minimum soil temperature at 3.9 inches	6.6 °F in the unmulched plot 20.6 °F in the mulched plot
February 2007	daily minimum soil temperature at 3.9 inches	Stayed below 18 °F for 16 and 24 consecutive days for mulched and unmulched plots (respectively). No snow cover until late February. Severe winter injury was observed in Spring/Summer 2007.
9 to 13 March 2007	Air temperatures (highs) Ground (soil surface) temperature Soil temps at 2.0 and 3.9 inch depth	50-60 °F. 30 to 31 °F 30 to 31 °F

Table 2: Plant data collected

	2006		2006		2007		2007	
	mulched		unmulched		mulched		unmulched	
Cultivar	**Yield***	**Plant stand****	**Yield***	**Plant stand****	**Yield***	**Plant stand****	**Yield***	**Plant stand****
AC Wendy	8.28	87.6	0.35	35.7	1.27	18.0	0.40	14.3
Annapolis	8.96	91.7	1.15	61.7	1.43	43.3	0.60	21.7
Brunswick	11.30	94.7	5.37	94.0	8.97	48.3	5.67	45.0
Cavendish	15.30	96.7	4.88	93.3	7.97	41.7	4.07	38.3
Clancy	4.31	97.7	2.03	93.3	0.77	10.7	0.13	2.3
Evangeline	2.72	51.7	1.26	93.3	0.87	12.7	0.20	8.3
Glooscap	4.73	95.0	2.20	76.7	3.00	40.0	1.50	26.7
Honeoye	10.83	88.3	4.69	91.7	4.13	35.7	1.80	30.0
Itasca	9.53	85.0	4.94	93.0	3.70	28.3	1.80	24.0
Jewel	10.14	95.0	5.85	95.0	4.47	33.3	2.33	23.3
Kent	6.08	96.3	5.11	88.3	4.53	41.7	2.63	26.7
L'Amour	10.90	88.0	2.19	96.3	3.13	14.3	1.53	23.3
Mesabi	14.72	98.0	3.10	79.7	8.53	46.7	4.53	31.7
Sable	12.70	96.3	2.25	98.3	5.70	58.3	2.67	48.3
Winona	7.32	96.3	4.35	73.3	1.93	23.3	0.83	12.0
Avg	**9.19**	**90.5**	**3.31**	**84.2**	**4.03**	**33.1**	**2.05**	**25.1**

* yield = lb/plot; plot size was 10 x 4 feet.
** plant stand = visual estimate of percent leaf coverage for designated area of each plot)

RASPBERRY HIGH TUNNEL FIELD DAY WELL ATTENDED

Geneva, New York. An crowd of thirty-eight growers, homeowners, consultants, extension educators, and other interested parties gathered for a raspberry high tunnel field day At the NYSAES on Sutton Rd Farm, Geneva, NY on Thursday September 24, 2009. The high tunnels are part of a research trial being conducted by Dr. Courtney Weber, Assistant Professor and Small Fruits Breeder at Cornell University's New York State Agricultural Experiment Station.

Dr. Weber, meeting host and organizer, erected the Haygrove tunnels in 2008 to test various raspberry varieties and advanced raspberry selections from his breeding program under high tunnel production systems. What follows are the handouts from the meeting for those of you who were unable to attend in person.

Part I: RASPBERRY AND BLACKBERRY VARIETY REVIEW

Courtney Weber, Associate Professor, Department of Horticultural Sciences, Cornell University, NYSAES, Geneva, NY 14456 caw34@nysaes.cornell.edu

Raspberry varieties are classified as floricane (summer) or primocane (fall) bearing. (A few primocane bearing types are described as everbearing, which produce a small to intermediate fall crop and can be managed in a double cropping system.) Raspberries are naturally biennial with a perennial crown. Primocanes grow the first year, go dormant in fall, get chilled in winter, and fruit the following summer (the primocanes are now called floricanes, which die after fruiting). New primocanes are growing as the floricanes fruit. Floricane varieties must be pruned in the spring to thin the fruiting canes and remove dead canes for better disease management and fruit size. There are red (Rubus idaeus), black (*Rubus occidentalis*), and purple (red x black hybrid) raspberry varieties suitable for production in temperate states.

Primocane varieties fruit on the first year's growth in the fall of the year. Currently, only red varieties (and some a few yellow) are available of this type although developments in black and purple raspberries include primocane fruiting. The strength of fruiting in primocane types varies widely from tips only on some floricane varieties to nearly the whole cane in varieties such as 'Autumn Britten' and 'Himbo Top'. Later primocane varieties such as 'Ruby' and 'Heritage' can have yield reductions from early frosts in more northern growing regions. Pruning in primocane varieties is done by mowing spent canes to the ground before primocanes emerge in early spring.

Currently available black and purple raspberry varieties are floricane bearing with most developed in New York or derived from germplasm from the region.

New raspberry varieties are actively being developed in about 11 public breeding programs around the world with the majority suitable for production in the temperate regions of the U.S. coming from Cornell University ('Heritage', 'Encore', 'Prelude', 'Titan', 'Ruby', 'Taylor'), University of Maryland ('Caroline', 'Anne', 'Jaclyn') and Ag Canada in Nova Scotia ('Nova', K81-6). Increasingly, new varieties from European programs are being introduced in to the U.S. ('Autumn Bliss', 'Autumn Britten', 'Polana', 'Polka', 'Himbo Top' and others). No variety will work well in all locations, soil types, and productions systems, but many have proven useful in many different situations. By planting a series of varieties, it is now possible to have fruit from mid to late June until fall frost (or longer with protection) in much of the temperate U.S. with only a short late-summer lag in production.

PRIMOCANE RED RASPBERRIES

Autumn Bliss (Great Britain, Plant Patent #6597) is an early ripening raspberry with large, highly flavored fruit. It ripens 10 to 14 days before Heritage. Much of the crop is produced within the first two weeks of harvest, which is an advantage in northern climates. It produces short canes with few spines. The fruit is dark red and darkens with storage and is fairly soft. It is susceptible to raspberry bushy dwarf virus.

Autumn Britten (Great Britain, Patent Pending) is early ripening with large, firm, good flavored fruit. The fruit tends to be dark and darken in storage. It is taller than 'Autumn Bliss' with better fruit quality but lower yields. It produces sparse cane numbers.

Caroline (University of Maryland, Plant patent # 10,412) is a large, good flavored, conical fruit. The fruit will darken with storage. It produces tall upright canes. The short fruiting laterals can be challenging to pick, but yields are very good for the fall. It has moderate to good resistance to Phytophthora root rot.

Heritage (Cornell University-NYSAES) is considered the standard for fall bearing varieties. These tall, rugged canes have prominent thorns and can very high yielding if the complete crop can be harvested. The primocane crop ripens relatively late. Fruit is medium-sized and has good color and flavor, firmness, and good freezing quality. It is resistant to most diseases. Due to its late ripening, this variety is not recommended for regions with cool summers or a short growing season with frost before September 30 unless high tunnels or other cold protection is used.
Himbo Top™ (variety 'Rafzaqu') (Switzerland) produces good quality, large fruit. The fruit is bright red with good flavor. Plants are vigorous and upright and medium in height with very long fruiting laterals that require trellising. Sucker production is somewhat sparse leading to moderate yields.

Jaclyn (University of Maryland, Plant Patent #15647) is an early season variety with large firm berries ripening 2 weeks before Heritage. The fruit is dark red with superior flavor and will darken with storage. The fruit is very long conical and adheres tightly until fully ripe. Plants are vigorous and erect but susceptible to yellow leaf rust. Potato leaf hoppers show a strong preference for this variety and can cause significant damage.

Joan J (Great Britain) is an early season variety with very firm fruit with a thick texture. The fruit is conic and dark red and will darken with storage. The canes are vigorous, upright and spineless making picking easy. Yield and fruit size is very good. The fruit skin is thin and can be damaged easily, especially in high temperatures.

Josephine (University of Maryland, Plant Patent #12,173) fruit is large with very good flavor ripening in the late season. Berries are firm and cohesive. Plants are upright and vigorous needing little containment trellising. It is resistant to leaf hopper and Phytophthora root rot. This variety will extend the season in a high tunnel system. (This variety is not currently available due to propagation problems.)

Polka (Poland) has medium large primocane fruit that ripen in the mid-fall season. The fruit is somewhat soft with good quality and a shiny red appearance. It is a vigorous variety with good sucker production. Potato leaf hoppers so a strong preference for this variety and can cause significant damage.

PRIMOCANE YELLOW RASPERRIES
Anne (University of Maryland, Plant patent # 10,411) produces large, conic, pale yellow fruit that ripen mid- to late season. It has very good flavor and texture. Tall upright canes sucker sparsely requiring higher planting density. It is resistant to Phytophthora root rot but susceptible to leaf hoppers and rust.

Kiwigold (New Zealand, Plant patent # 11,313) and **Goldie** (cv. Graton Gold) (California, Plant Patent #7,625) are amber sports of Heritage, similar in all characteristics except fruit color. Fruit blushes pink when overripe with Goldie slightly darker. The fruit is medium-sized and has good flavor and firmness and ripens relatively late. They are resistant to most diseases.

FLORICANE RED RASPBERRIES
Early Season
Boyne and **Killarney** (sibling varieties from Manitoba) perform very similarly. Both have are early season with small to medium sized fruit with good eating and freezing quality but can be somewhat dark and soft. The plants are spiny and produce many suckers. They have excellent winter hardiness but are susceptible to anthracnose. Boyne is moderately resistant to late yellow rust and tolerant to Phytophthora root rot and crown gall, but is susceptible to raspberry fireblight. Killarney is moderately resistant to Phytophthora root rot and is susceptible to mildew.

Prelude (Cornell University-NYSAES, Plant Patent #11,747) is the earliest summer fruiting variety available. The fruit is medium sized, round, and firm with good flavor. It is very resistant to Phytophthora root rot and has good cold hardiness.

A moderate fall crop is large enough to warrant double cropping. It is the best early season variety available for the northeast.

Mid Season

Canby (Oregon) canes are tall, nearly spineless, and moderately productive. The fruit ripens mid season, is medium to large in size, firm, and bright red with excellent flavor. It has moderate to poor cold hardiness, and buds may winter kill in cold climates. It is susceptible to Phytophthora root rot.

Nova (Nova Scotia) is vigorous and upright with long, fruiting laterals. The canes have very few spines. The fruit ripens in mid-season and is medium sized, bright red, firm, and somewhat acidic in taste. It is considered to have better than average shelf life. The plants are very hardy and appear to resist most common cane diseases, including rust. It will set a late fall crop.

Titan (Cornell University-NYSAES, Plant patent # 5404) produces large canes with very few spines with suckers that emerge mostly from the crown, so it is slow to spread. It is susceptible to crown gall and Phytophthora root rot but is extremely productive. Fruits ripen mid to late season and are extremely large and dull red, with mild flavor. Berries are difficult to pick unless fully ripe. With only fair hardiness, Titan is for moderate climates. It is resistant to the raspberry aphid vector of mosaic virus complex.

Late Season

Encore (Cornell University-NYSAES, Plant patent # 11,746) is one of the latest summer fruiting raspberry varieties available. It produces large, firm, slightly conical berries with very good, sweet flavor. The fruit quality is considered very good. It is moderately susceptible to Phytophthora root rot and has good cold hardiness.

K81-6 (Nova Scotia) produces canes that are medium tall with spines only at the base. The fruit is very large with good flavor that ripens very late summer with average firmness. It is resistant to late yellow rust but is susceptible to leaf curl virus and raspberry fire blight. Hardiness is judged adequate for most areas.

BLACK RASPBERRIES

Black Hawk (Iowa State University) fruit is small and glossy with good firmness. Plants are vigorous, similar to wild types. The canes are relatively hardy, and resistant to anthracnose. Yields are moderate. This variety is generally falling out of favor due to its small fruit and wild growth habit.

Bristol (Cornell University-NYSAES) fruit is medium to large and firm, with excellent flavor. Plants are vigorous, high yielding for black raspberry and hardy. It is susceptible to anthracnose and tolerant to powdery mildew.

Haut (USDA-ARS, Maryland) fruit is large sized but soft. The dark shiny black color makes them very attractive. It ripens over a long period producing good yields. The plants are vigorous and upright with good productivity.

Jewel (Cornell University-NYSAES) fruit is large, firm, glossy, and flavorful. Plants are vigorous, erect, hardy, and productive. This variety appears to be more disease resistant than others including resistance to anthracnose.

Mac Black (Michigan) ripens medium large berries 7-10 days later than most varieties. The fruit is large, moderately firm and flavorful. The canes are vigorous, erect, and hardy.

PURPLE RASPBERRIES

Brandywine (Cornell University-NYSAES) ripens later than most red varieties and are large, reddish-purple, and quite tart. Berries are best used for processing. This is a high yielding variety. Canes are very tall with prominent thorns, and suckers grow only from the crown so the plant will not spread. It is susceptible to crown gall but partially resistant to many other diseases.

Royalty (Cornell University-NYSAES, Plant patent # 5405) is the most widely planted purple variety. Fruit ripen late and are large and reddish-purple to dull purple when fully ripe. Berries tend to be soft but sweet and flavorful when eaten fresh. It is excellent for processing and can be harvested when fruit is red for fresh eating. Canes are tall and vigorous, with thorns, and are extremely productive. Royalty is immune to the large raspberry aphid, which decreases the probability of mosaic virus infection, but is susceptible to crown gall.

PART I: PRIMOCANE RASPBERRY TRIAL SPECIFICATIONS

New York State Agricultural Experiment Station
Cornell University
Geneva, NY 14456

Varieties

Autumn Britten	Caroline
Heritage	Himbo Top
Jaclyn	Joan J
Polka	

Planted May 20, 2008.

Field Plan

Haygrove multibay high tunnels
-24 ft. wide, 12 ft. peak height
-8 ft. row center spacing
-3 ft. between plants
-initial beds 18 in. wide, 6 in. high
-plastic covering applied July 6, 2009

Trellis

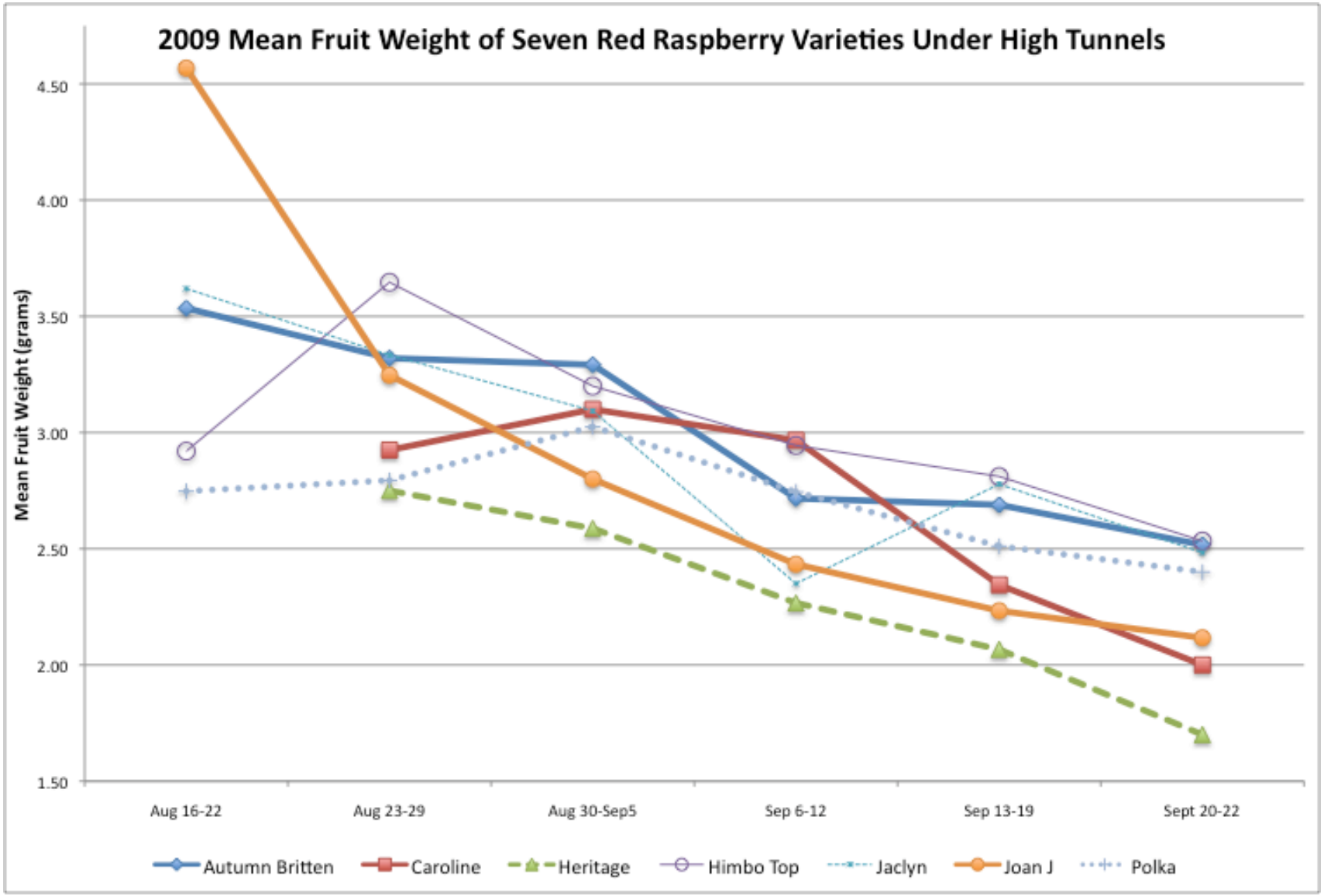
V-trellis
-4 in. pressure treated lumber posts sunk 48 inches for anchors.
-V formed by opposing steel T-posts
-18 inch bottom spacing
-2 ft. at 5 ft. high
-3 wires with cross members at row ends
-monofilament line 2.5 mm (approx. 12 gauge) 496 lb. test

Irrigation

-heavy wall dripper tubing, 17 mm, 4GPH
-24 in. emitter spacing
-target of 1 in. per week during vegetative development
-target of 1.5 to 2 in. per week during fruit development and harvest

Pest Control

-beneficial insect release
-for 2 spotted spider mites released 4000 *Phytoseiulus persimilis* predator mites
-for aphids released 4500 *Hippodamia convergens* lady bugs
-manual weed control with hoes and string trimmers
-spot treatment with glyphosate to supplement weed control.


2009 Mean Fruit Weight of Seven Red Raspberry Varieties Under High Tunnels
Mean Fruit Weight (grams)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
Aug 16-22
Aug 23-29
Aug 30-Sep5
Sep 6-12
Sep 13-19
Sept 20-22
Autumn Britten
Caroline
Heritage
Himbo Top
Jaclyn
Joan J
Polka

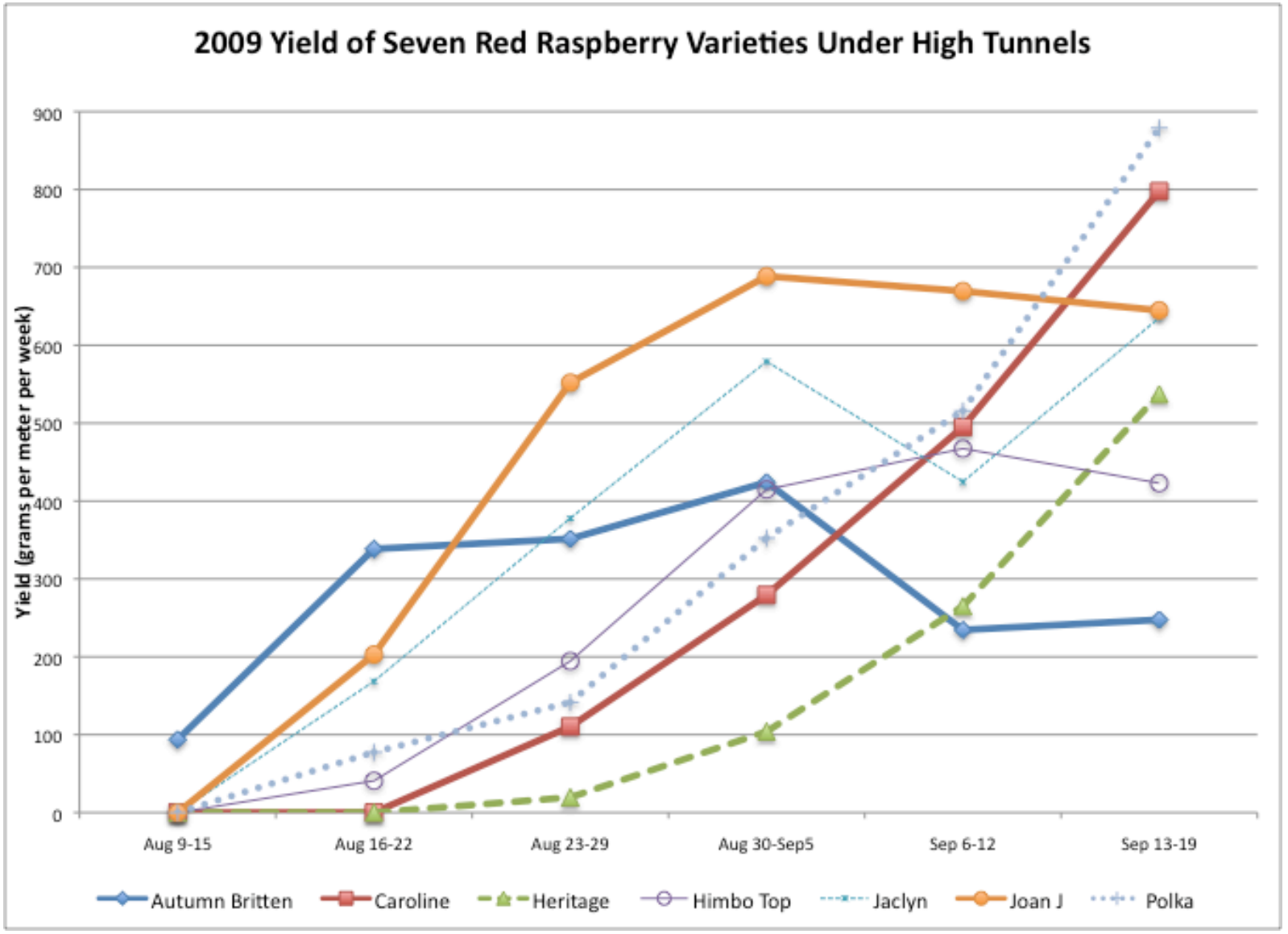

2009 Yield of Seven Red Raspberry Varieties Under High Tunnels
Yield (grams per meter per week)
900
800
700
600
500
400
300
200
100
0
Aug 9-15
Aug 16-22
Aug 23-29
Aug 30-Sep5
Sep 6-12
Sep 13-19
Autumn Britten
Caroline
Heritage
Himbo Top
Jaclyn
Joan J
Polka

Table 1: Yield Statistics for 7 Raspberry Varieties Grown Under High Tunnels in 2009.						
Variety	Estimated Yield Per Season* (lbs per foot)	Estimated Yield Per Season* Per Acre with Rows on 8 ft Centers (lbs)	First Harvest Date	Days Since First Harvest	Total Number of Harvest Days for this Season*	Estimated Peak Harvest (midpoint of a 5 day moving average) for this Season.*
Autumn Britten	1.2	6481.6	8/11	42	23	9/1
Caroline	1.3	6857.9	8/25	28	13	9/17
Heritage	0.7	3809.8	8/28	25	11	9/18
Himbo Top	1.2	6289.7	8/18	35	21	9/4
Jaclyn	1.6	8862.5	8/17	36	23	9/9
Joan J	2.0	10980.1	8/17	36	21	9/10
Polka	1.5	8257.6	8/18	35	21	9/16

*These estimates are for a truncated season (the date of first harvest through September 22). Please contact us at a later date if you are interested in obtaining the final yield for a full season.

Table 2: Mean Weekly Fruit Weight for 7 Raspberry Varieties Grown Under High Tunnels in 2009.						
	Aug 16-22	Aug 23-29	Aug 30-Sep5	Sep 6-12	Sep 13-19	Sept 20-22
Autumn Britten	3.54	3.32	3.29	2.72	2.69	2.52
Caroline	N/A	2.92	3.10	2.97	2.34	2.00
Heritage	N/A	2.75	2.59	2.27	2.07	1.70
Himbo Top	2.92	3.65	3.20	2.94	2.81	2.53
Jaclyn	3.62	3.33	3.09	2.35	2.78	2.48
Joan J	4.57	3.25	2.80	2.43	2.23	2.12
Polka	2.75	2.79	3.03	2.74	2.51	2.40

PART II: FOOD SAFETY UPDATE FOR RASPBERRY FIELD DAY

Betsy Bihn, National GAPs Program Coordinator, Department of Food Science, Cornell University College of Agriculture and Life Sciences, Ithaca, NY

I. Irrigation Water Quality Database

The National GAPs Program is developing an Irrigation Water Quality Database. We are looking for 34 farms in New York that use surface water in the production of fresh fruits and vegetables to participate in this project in 2009. If you participate, project collaborators will take at least 3 water samples from your surface water source(s) in 2009, have it analyzed for quantified generic *E.coli*, specific conductance, pH, and turbidity. Although the standard analysis requested is for quantified generic *E.coli* only, we are doing some additional analysis in an attempt to draw some correlations that might allow us to make better recommendations regarding water quality in the future. Participating growers will be provided with a copy of all of their water testing results. This will all be done at no cost to the farm. There may be additional funding next year to continue the project and participating farms this year will be given the first opportunity to participate next year.

The benefits of building an Irrigation Water Quality Database include:

1. A better understanding of the quality of surface water used in fresh produce production during irrigation, frost protection, and for protective sprays.
2. To determine surface water quality so that any decisions regarding national irrigation water quality standards have a better chance of being science-based.
3. Provide irrigation water quality data to growers so they can make decisions about the use of surface water based on its quality and so they can be prepared for third party audits.

All data collected from individual farms will be coded to maintain privacy. If you are interested in participating in this project or if you have any question regarding this project, please contact Betsy Bihn by email at eab38@cornell.edu or by phone at 315 787 2625.

Industry Impact

Previous studies of irrigation waters have been concerned primarily with chemical rather than microbiological water-quality parameters. As a result, there is a nationwide knowledge gap regarding the microbiological quality of irrigation waters. Public attention to recent outbreaks of foodborne illness has led several commodity groups to self-mandate irrigation water sampling and have set quality standards based on the United States Environmental Protection Agency's (EPA) recreation water criteria for swimming beaches. Recreational-water criteria may not be appropriate for direct application to irrigation water; however, in the absence of other data, the EPA standards have been adopted by commodity groups throughout the US. Preliminary research data gathered from surface water sources currently used to overhead irrigate fresh produce crops in NY indicates that if growers in NY were forced to adopt the EPA recreational water standards, they would either have to discontinue use of some of their water sources or implement mitigation strategies to reduce the bacterial load. These mitigation strategies could represent a significant financial investment and directly impact farm viability. Fresh produce growers should be testing their water so that they understand the quality of water they use during production to improve food safety practices as well as understand the impact current and future industry standards will have on their operation.

II. Good Agricultural Practices Online Produce Safety Course:

Implementing Good Agricultural Practices is a 3-week web-based course offered through the National GAPs Program. Most of the cost of the current section of the course is covered by a grant from the United States Department of Agriculture that also was used to develop the course content, so it will only cost you $50 to participate. The true cost of the course is approximately $350. Class size is limited to 25 people.

Time Commitment

Within the three weeks you are expected to:

Complete online survey
Read all course materials
Turn in 4 assignments for evaluation
Complete 2 self-tests and pre/post tests
AND contribute to the discussion boards.

Most students spend 15 to 20 hours on this course, but depending on your knowledge, more or less time may be required.

Here is the course outline so you can review the content areas.

Good Agricultural Practices Online Produce Safety Course Outline

Module One: Welcome to Implementing GAPs: A Key to Produce Safety
1.0.0 Module Home Page
- 1.1.0 About This Course

Module Two: Shared Responsibility in Food Safety
2.0.0 Module Home Page
- 2.1.0 Reasons for Engagement
- 2.2.0 Module Wrap-Up

Module Three: Good Agricultural Practices
3.0.0 Module Home Page
- 3.1.0 Worker Training, Hygiene, and Health
- 3.2.0 Water Use
- 3.3.0 Postharvest Water Use
- 3.4.0 Soil Amendments
- 3.5.0 Cleaning and Sanitation
- 3.6.0 Traceback and Recall
- 3.7.0 Crisis Management
- 3.8.0 Other Important Practices
- 3.9.0 Module Wrap-Up

Module Four: Implementing Change
4.0.0 Module Home Page
- 4.1.0 Education and Training in Food Safety
- 4.2.0 Building the Plan
- 4.3.0 Module Wrap-Up

Module Five: Course Conclusion
5.0.0 Module Home Page
- 5.1.0 Concluding Activities

If after reading the information provided you would like to enroll, please complete the enrollment information and submit a $50 payment for the course at www.ecornell.com/gaps . If you have questions, please contact me at eab38@cornell.edu or 315 787 2625.

PART III: HIGH TUNNELS FOR LATE FALL RASPBERRIES AND BLACKBERRIES

Marvin Pritts, Professor, Dept. of Horticulture, Cornell University, Ithaca, NY 14853

Producing fruits, vegetables and flowers out-of-season is one way to increase value and income because crops usually can be sold at a higher price then. The use of high tunnels is a technology that can be implemented just about anywhere for a modest cost, and can be used to bring crops on earlier or extend them later in the season. A high tunnel is simply a large hoop house covered in plastic, with sides that can be rolled up or opened for ventilation. High tunnels are not powered by electricity so they do not typically have fans, heaters or lights. Because the plastic covering is generally applied and removed seasonally, and because they are not powered with electricity, high tunnels are usually classified as temporary structures and may fall outside of certain taxing, building and zoning requirements.

Plants are set directly into the soil under the tunnel. Tunnels are high and wide enough to allow tractors through to spray and cultivate. A typical size is 15 to 30 feet wide and 96 feet long. Europeans have been using this technology for years, and often connect several tunnels together. The Chinese also have been using a type of tunnel technology to produce fruits and vegetables. Because the United States is such a large country, we have found it economical to grow crops in the south and ship them north to extend the season. However, even in warm climates, tunnels are helping to improve fruit quality.

Raspberries are a high value crop that, in season, sell for more than $3.00/lb. In the middle of winter, raspberries can sell for more than $10.00/lb. Our goal was to produce raspberries in October and November, after the field season ends from

frost and rain, and when the selling price of raspberries jumps. We planted primocane-fruiting raspberry varieties, managed them in various ways to delay their production beyond the normal late August-September season, and then fruited them under a plastic tunnel.

Primocane-fruiting raspberries were planted in April of 2004 in 4 rows spaced 7 ft apart. Plots were 16 ft. long (6 per row). All canes were mowed to the ground in the fall of 2004 after summer's growth. In spring of 2005, we installed the framework for a tunnel over the planting. The tunnel was covered with plastic on September 13, 2005, just prior to harvest.

Typically, a grower would prefer that fall-bearing types fruit early to avoid frost so that a full harvest can be achieved. Our objective was to delay fruiting of Heritage until late in the fall when they would be protected by the high tunnel, and when the availability of fresh raspberries is low and the price is high. Five treatments were used: an unmanipulated control, applying straw over plots in late February to delay cane emergence, mowing canes to the ground in early June shortly after they emerge, pinching primocanes (removing the top 4 6 inches) when they reach a height of about 2 ft., and pinching when canes were 3 ft. tall. Each of these manipulations delayed flowering and shifted production later in the season.

Harvest started in early September at the normal time. Tunnel sides were rolled up in the morning and closed in the evening to regulate temperature. As the weather turned colder, outdoor plants slowed their production and fruit quality deteriorated. October was characterized by record rainfall, so any outdoor fruits that survived were moldy and tasteless. Inside the tunnel, however, fruit quality remained high and harvest continued into November. On particularly cold nights, we covered the plants with row cover since tunnels do not provide a large amount of frost protection. On most nights, however, we simply closed the sides and doors of the tunnel while allowing some ventilation during the day.

We were concerned that pollination would be a problem in the fall, so were anticipating requiring a bee hive. However, native bumble bees were attracted to the house in large numbers, without adding a hive. The stayed in the house continuously, sleeping under the leaves and foraging on raspberry flowers during the day.

Yields were high; we averaged nearly 2 lbs. per ft. of row in control plots of Heritage. Because rows were closer together than in the field, our yield per unit area was about 4 times higher than yields from outdoor plantings. Since much of the fruit was produced out-of-season, we sold our fruit at the Cornell Orchards store for $5.00/pint ($6.70/lb). Assuming that all of the plants in the tunnel produced as well as the Heritage controls, and assuming that we could sell everything from the tunnel, our gross sales from our 96 ft long x 30 ft wide tunnel would have been more than $6,000.
We have repeated these results in four successive years with fall-bearing raspberries, and have no evidence that yields or quality have diminished. This year we will be harvesting the primocane-fruiting blackberry Prime-Jan during September and October, extending the blackberry season from mid-July to well past frost.

Given that energy and transportation costs continue to rise, and knowing that high tunnels use free solar energy, it may worth considering placing a few high tunnels on the farm to extend the season of the most highly-valued crops.

PART IV: INSECT AND MITE MANAGEMENT IN HIGH TUNNEL RASPBERRIES

Greg Loeb, Associate Professor, Dept. of Entomology, Cornell University, NYSAES, Geneva, NY 1445

Insect and Mite Management in High Tunnel Raspberries

A. Use IPM practices for High Tunnel facilities
-Scout and use economic thresholds if available
-Rotate materials to manage resistance if possible
-Be aware of impact of pesticides on beneficials

B. Pesticides in high tunnels
-Read label, be aware of special greenhouse restrictions
-Most insecticides and miticides ok for greenhouse use. Spintor 2SC not allowed

C. Arthropod pests of brambles

1. **Two-spotted spider mite**
a. look for white stippling on leaves

b. may be more problematic in high tunnels
c. use of predatory mites (purchase from biocontrol insectaries like IPM Labs in New York or Rincon-Vitora in California)
1. *Amblyseius (Neoseiulus) fallacis* is a native that does well in brambles and can survive without mite prey.
2. Start releases early sign of spider mites rather than waiting like you might do with miticides.
d. Savey 50DF

2**. Potato Leafhopper**
a. look for distorted growth at shoot tips. Varietal differences.
b. proximity to alfalfa may increase problems.
c. Assail SG or Sevin WSP

3. **Aphids**
a. not generally a serious problem, but 2009 big aphid year.
b. natural enemies often come in to control
c. release of ladybugs often not reliable
d. Assail SG or malathion 57EC

4. **Japanese beetle**
a. Adults feed on foliage and fruit, larvae mostly on roots of grasses
b. Assail SG, carbaryl, malathion

5. **Tarnished plant bug**
a. feeding causes deformed fruit
b. attracted to flowers and fruit; weed management important
c. becomes more abundant later in the season.
d. malathion, Assail SG (not great)

6. Other pests??

Questions or Comments about the New York Berry News?

Ms. Cathy Heidenreich
NYSAES Cornell, 630 W. North Street, Geneva, NY 14456
Phone: 315-787-2367 *Email*: mcm4@cornell.edu

Check out the NYSAES Tree Fruit and Berry Pathology web site at: **www.nysaes.cornell.edu/pp/extension/tfabp**

Part V: Bramble Diseases in High Tunnels

Dr. Kerik Cox, Tree Fruit and Berry Pathology

Small Fruit Twilight Tour

September 24th 2009 Geneva, New York

Disease management in high tunnels

1. Tunnels exclude rain and external sources of disease inoculum ➔ LOW DISEASE PRESSURE
2. Scout frequently: Minimum of 1 time/week, 2 times/week better.
3. Optimize ventilation in tunnel ➔ reduces humidity & promotes foliage drying
4. Trellis canes to promote air circulation in planting
5. Harvest ripe fruit promptly & remove any infected material
6. Fungicides (See back)

Powdery Mildew

(Scout Starting: Early Bloom)

- Symptoms: pale chlorotic blotching
- Signs: Powdery mycelium and spores covering blotches
  - –small black/brown angular spots
- Host (severe):
  - – susceptible cultivars red, black, and purple raspberries
  - – Blackberries not usually affected

Leaf Rusts (Orange & Late Leaf)

(Scout Starting: Spring-Fall)

- Symptoms:
  - – Weak canes with spindly clusters of shoots
  - – Pale misshapen leaves
  - – Chlorotic yellow spots turn brown
- Host (severe): Orange rust: black and purple only. Late leaf rust resistant varieties

Gray Mold (Botrytis)

(Scout Starting: Early Bloom)

- Symptoms:
  - – Soft rot of fruit
  - – Blossom blight
- Host (severe): Attacks all hosts equally

Fungicide use in high tunnels

- Greenhouse use restrictions? Any structure is not a greenhouse if:
  - – the structure enclosed by a porous material (ex. nylon mesh, cheese cloth)
  - – the structure has porous walls or has walls and sides removed
  - – the structure has non-porous walls and sides removed during application and corresponding REI.

- Pesticides can be used in a greenhouse unless the label specifically prohibits greenhouse use.

- List of key disease and fungicides on which current labels do not specifically restrict use on raspberries in greenhouses.

- Powdery mildew: Rally 40W & WSP, and JMS Stylet Oil (Organic and conventional)
- Rusts (Late leaf only): JMS Stylet Oil (Organic and conventional)
- Gray mold: Elevate 50WDG, Switch 62.5 WG, Rovral 4L AG

SUCCESSFUL LOCAL MARKETING

Brian M. Henehan, Senior Extension Associate, Department of Applied Economics and Management, Cornell University

Much has been written about "buying local" from a consumer's viewpoint. Popular press and the media have highlighted the "rise of the locavore" or the "100 mile diet". Less has been written about how producers might successfully market their farm products locally.

In reality, only a limited number of producers can take advantage of this marketing opportunity for the following reasons: farm location constraints, the need to market large volumes of farm output, seasonal production cycles, and limited human resources available to market farm products locally. As in the world of retail – "location, location, location" is one important factor in marketing locally. If a farm is located in a very remote area (hundreds of miles from consumers) that producer is probably not in a position to take advantage of the buy local trend. If the number of consumers within the 100 mile (or local) zone is extremely small, a farm would be hard pressed to survive on local sales only. Many farms harvest crops only during a limited period of time, whereas consumers desire food year round. Many farms need to market relatively large volumes of products to remain economically sustainable. Even if a large percentage of the local population purchased their farm products, the total volume of purchases might not generate adequate sales to support the farm. Much of the "buy local" purchases from farms require that a farm have the human resources to support local sales. Marketing through local farmers' markets, roadside stands or community supported agriculture enterprises typically requires additional marketing staff. Some producers possess excellent growing or animal husbandry skills, but might not have time (or the desire) or staff to interact with local customers and buyers.

Clearly, on the other hand, the trend towards buying local offers some opportunities to producers that farm in the right location, overcome seasonal limits to farm production, have production to sell locally that fits well with the whole farm enterprise, and adequate human resources for marketing farm products to consumers or buyers. The question arises, how might these producers successfully market their farm products to local consumers and buyers?

First, producers should consider what type of marketing they are most comfortable with. What type of marketing fits well with the overall farm plan, and generates the greatest economic returns? Some farmers may not be interested in the increased interaction with local consumers or buyers that would be required, while others have the personality or interests that would point towards the required interaction. Seasonality is an issue for many crops, particularly in northern areas with a limited growing season. Product distribution to local markets beyond farm direct marketing would need to be considered if a farm needs to market larger volumes of product.

Some farms and markets lend themselves to increased local production; others may already be producing a high volume of locally produced foods without the consumer even knowing it. The majority of fluid milk that is produced year round is typically sold within a local area given that fresh milk does not travel well. Many canned or frozen fruits and vegetables produced in New York State are grown by local producers, processed in the state, and marketed 365 days a year overcoming the seasonal limitations of fresh products.

As producers market closer to home, a greater emphasis on their reputation and reliability arises because buyers get a closer look at who is producing their food. And so, individual producer reputation can become a key reason for doing business with them. Reputation becomes more important for producers operating in small or local markets resulting in a "small world" of contacts and relationships. Word can travel fast about transactions that didn't turn out well for customers. Reputations can be quickly enhanced or tarnished in markets with a small number of players. A positive reputation can be a key factor in successfully serving a local market.

It is important for producers to remember that the increased consumer interest in buying local does not create an "entitlement" for those farms situated in the local area, nor that they "own" a local market. They must effectively compete to earn the loyalty of the consumers or buyers that are their customers. At the end of the day, a successful local marketing strategy must be based on a number of the basic elements of marketing: quality, service, reliability, and price.

When sweet corn season arrives in our area, our neighbor has built a successful local market for his corn by maintaining his reputation as having the best quality corn at a reasonable price. He offers an attractive stand staffed by service-oriented staff that enjoy what they do. His local sales don't support the whole farm enterprise, but have become a growing source of revenue for his farm. Are his local sales profitable for him? I assume so but like many farmers, he isn't willing to tell. And so, understanding how you might leverage the increased interest in buying local for your farm can indeed be "Smart Marketing".

"Smart Marketing" *is a marketing newsletter for extension publication in local newsletters and for placement in local media. It reviews elements critical to successful marketing in the food and agricultural industry.*

WEATHER NOTES

NEW YORK CROP WEATHER SERVICE NOTES

Week ending September 13th: A Canadian high pressure dominated most of New York State. However, late in the week an area of low off the Mid-Atlantic Coast moved westward to the Delmarva. This low moved little Friday and Saturday and brought rain to the eastern portion of the state. Temperatures were near normal much of the period with below normal readings Friday, September 11th, due to the cloud cover and rain. Precipitation varied across the state with below normal across western New York.

Week ending September 20th: The departure of a low off the Atlantic Coast last Saturday was followed by a Canadian high building in from the west Sunday and Monday. A second cold front moved through early Tuesday and brought another Canadian air mass followed by a cutoff upper low on Thursday and a weak frontal passage on Friday. The week ended with sunny but somewhat cool weather Saturday. Abundant sunshine resulted in near normal temperatures for the first three days before the cold front and upper low brought cloudiness to much of the region and highs were 10 to 15 degrees cooler on Wednesday and Thursday. A return flow of warmer air brought temperatures back up to near normal Friday but the arrival of cooler air Saturday resulted in temperatures a few degrees below normal. Over most of the region the week was quite dry. The main exception was the northern Adirondacks where over an inch of rain fell at Saranac Lake on Monday evening. The weather was fairly dry farther south with just a trace for the entire week at Albany and Glens Falls, with a little over a tenth of an inch farther south mostly on the morning of the 16th.

Week ending September 27th: It was a mild week across southern and western sections of the state where temperatures averaged a few degrees above normal while northern and eastern sections of the state were near normal. Precipitation for the week ended up being normal or above normal in most areas mainly due to rainfall late Saturday and Saturday night. The week started out cool and dry Sunday morning with frost in some areas but temperatures quickly rebounded as a large ridge of high pressure built along the northeast coast and then moved out to sea by the middle of the week. A low pressure system moved into the eastern Great Lakes Wednesday morning with mild conditions across the state ahead of this system. The low pressure system brought some rain to the state with the most rain across western and central sections which were followed by a cold front that pushed through the state by Thursday morning. This was followed by a large area of high pressure which moved south from Canada bringing cool conditions to the state on Friday and Saturday with some frost in places on Saturday morning. Rain fell across the state late Saturday and Saturday night ahead of a low pressure system which moved east from the Ohio Valley.

Week ending October 4th: Temperatures averaged below normal and precipitation averaged above normal across much of the state during this week. A weak coastal low traveled north along the Mid-Atlantic coast Sunday producing rain and scattered thunderstorms across eastern and central portions of the state. A strong cold front then swept eastward across the state Monday producing scattered showers and thunderstorms. In the wake of this front, colder air swept east across the state. As this cold air traversed the relatively warm Great Lakes, locally heavy lake effect rain showers and thunderstorms affected western portions of the state late Monday into Wednesday night. Some snow mixed in with the showers Tuesday night through Wednesday night. Another low pressure system moved northeast into the western Great Lakes Saturday, triggering more showers and thunderstorms as an occluded front associated with the low moved eastward across the state. Patchy frost occurred across south central and southeast portions of the state, including eastern Long Island Friday morning. The growing season has already ended across much of the Adirondacks extending into the Lake George region.

Week ending October 11th: Temperatures and precipitation were around normal for the week. A couple of storm systems impacted the region this past week. The first storm brought strong winds, rain and some thunder for the mid week period. In fact, damaging non thunderstorm wind gusts were observed across the Empire State. The next storm provided additional rainfall for most of the area at the end of last week as a cold front moved across the region. This frontal passage provided much cooler weather heading into the weekend which provided more nightly frost conditions.

WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, September 13th, 2009

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	***Low***	***Avg***	***DFN[1]***	***Week***	***YTD[2]***	***DFN***	***Week***	***DFN***	***YTD***	***DFN***
Hudson Valley											
Albany	76	46	62	-2	88	2327	76	0.34	-0.36	24.21	6.19
Glens Falls	78	39	60	-1	73	1967	3	0.17	-0.58	20.08	2.30
Poughkeepsie	77	47	63	-2	94	2456	91	0.70	-0.14	27.99	7.26
Mohawk Valley											
Utica	75	42	59	2	65	1441	-101	0.08	-1.25	24.02	-0.97
Champlain Valley											
Plattsburgh	77	43	60	-1	73	1892	-98	0.00	-0.77	17.65	0.24
St. Lawrence Valley											
Canton	76	45	60	0	71	1764	-25	0.23	-0.69	18.33	-0.09
Massena	79	44	61	2	75	1935	60	0.00	-0.84	17.62	0.80
Great Lakes											
Buffalo	78	50	66	3	112	2198	32	0.00	-0.85	17.65	-0.79
Colden	75	47	62	1	84	1717	-44	0.00	-1.12	19.84	-1.44
Niagara Falls	79	51	66	3	111	2186	15	0.00	-0.91	20.55	2.63
Rochester	78	49	64	0	97	2082	-13	0.01	-0.71	17.67	1.85
Watertown	80	39	62	2	88	1908	83	0.01	-0.77	15.26	0.65
Central Lakes											
Dansville	76	50	62	-2	86	2137	30	0.25	-0.59	15.58	-1.73
Geneva	78	49	63	0	96	2049	-41	0.10	-0.67	16.92	-0.18
Honeoye	79	44	61	-4	78	1987	-200	0.00	-0.77	21.93	4.97
Ithaca	77	46	62	1	86	1860	-32	0.32	-0.52	19.44	1.00
Penn Yan	77	47	63	-1	91	2176	86	0.29	-0.48	15.49	-1.61
Syracuse	80	49	65	2	106	2312	191	0.01	-0.90	17.23	-2.16
Warsaw	75	49	61	3	78	1660	35	0.06	-0.92	22.74	2.49
Western Plateau											
Alfred	76	48	62	3	84	1520	-83	0.33	-0.51	21.58	2.40
Elmira	78	47	62	0	87	2052	54	0.38	-0.38	14.47	-2.96
Franklinville	75	45	60	2	71	1591	119	0.10	-0.88	25.98	5.52
Sinclairville	77	47	62	3	89	1838	180	0.11	-1.01	25.21	2.32
Eastern Plateau											
Binghamton	75	50	62	2	87	2004	67	0.30	-0.52	20.48	2.05
Cobleskill	75	42	58	-4	57	1838	35	1.01	0.10	22.36	2.56
Morrisville	75	48	62	2	81	1739	23	0.31	-0.64	22.73	2.99
Norwich	79	43	60	0	74	1827	22	0.22	-0.69	27.11	7.48
Oneonta	76	46	61	2	77	1892	233	0.20	-0.64	21.01	-0.17
Coastal											
Bridgehampton	76	53	65	-2	108	2362	138	0.31	-0.53	23.24	3.85
New York	76	58	68	-3	127	3054	96	0.55	-0.29	26.95	6.39

1. *D*eparture *from N*ormal
2. *Y*ear *to D*ate: Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning

The information contained in this weekly release is obtained in cooperation with Cornell Cooperative Extension, USDA Farm Service Agency, the National Weather Service, Agricultural Weather Information Service and other knowledgeable persons associated with New York agriculture. Their cooperation is greatly appreciated. Visit our website at www.nass.usda.gov/ny and click on "subscribe to ny reports" for instructions on subscribing electronically. you may also visit our website to access all our reports which are available for free online.

WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, September 20th, 2009

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	*Low*	*Avg*	*DFN*[1]	*Week*	*YTD*[2]	*DFN*	*Week*	*DFN*	*YTD*	*DFN*
Hudson Valley											
Albany	76	38	59	-3	65	2392	65	0.00	-0.70	24.21	5.49
Glens Falls	76	32	57	-2	54	2021	-4	0.00	-0.70	20.08	1.60
Poughkeepsie	79	38	60	-3	71	2527	78	0.10	-0.67	28.09	6.59
Mohawk Valley											
Utica	70	34	53	-3	29	1470	-115	0.14	-1.14	24.16	-2.11
Champlain Valley											
Plattsburgh	73	33	56	-3	46	1938	-113	0.30	-0.40	17.95	-0.16
St. Lawrence Valley											
Canton	71	34	54	-5	31	1795	-49	0.51	-0.40	18.84	-0.49
Massena	74	36	56	-2	45	1980	51	0.74	-0.09	18.36	0.71
Great Lakes											
Buffalo	75	40	60	-3	70	2268	21	0.00	-0.80	17.65	-1.59
Colden	71	36	55	-4	37	1754	-68	0.02	-1.10	19.86	-2.54
Niagara Falls	77	39	60	-2	71	2257	6	0.00	-0.86	20.55	1.77
Rochester	74	39	59	-4	61	2143	-33	0.00	-0.70	17.67	1.15
Watertown	74	29	55	-5	40	1948	61	0.10	-0.67	15.36	-0.02
Central Lakes											
Dansville	73	37	57	-5	53	2190	5	0.04	-0.74	15.62	-2.47
Geneva	74	40	59	-3	66	2115	-51	0.05	-0.72	16.97	-0.90
Honeoye	74	32	57	-6	53	2040	-232	0.00	-0.73	21.93	4.24
Ithaca	73	35	57	-4	50	1910	-49	0.11	-0.73	19.55	0.27
Penn Yan	74	38	59	-3	65	2241	75	0.01	-0.76	15.50	-2.37
Syracuse	74	36	60	-2	70	2381	183	0.04	-0.87	17.27	-3.03
Warsaw	70	37	56	-2	41	1701	23	0.04	-0.90	22.78	1.59
Western Plateau											
Alfred	73	37	58	1	54	1574	-81	0.00	-0.84	21.58	1.56
Elmira	77	33	58	-3	57	2109	41	0.01	-0.71	14.48	-3.67
Franklinville	72	34	55	-2	39	1630	111	0.03	-0.89	26.06	4.63
Sinclairville	74	37	58	0	58	1896	181	0.00	-1.12	25.21	1.20
Eastern Plateau											
Binghamton	72	35	57	-3	53	2057	55	0.48	-0.29	20.96	1.76
Cobleskill	73	35	57	-2	50	1888	25	0.00	-0.89	22.36	1.67
Morrisville	70	40	57	-2	52	1791	18	0.30	-0.65	23.03	2.34
Norwich	76	36	58	-2	55	1882	17	0.05	-0.86	27.16	6.62
Oneonta	73	36	57	0	51	1943	232	0.10	-0.74	21.11	-0.91
Coastal											
Bridgehampton	78	43	62	-2	89	2451	131	0.66	-0.14	23.90	3.71
New York	81	55	68	0	127	3181	97	0.01	-0.76	26.96	5.63

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WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, September 27th, 2009

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	*Low*	*Avg*	*DFN*[1]	*Week*	*YTD*[2]	*DFN*	*Week*	*DFN*	*YTD*	*DFN*
Hudson Valley											
Albany	80	37	62	4	83	2475	87	0.64	0.01	24.85	5.50
Glens Falls	77	31	58	3	61	2082	10	0.49	-0.21	20.57	1.39
Poughkeepsie	82	37	62	3	86	2616	96	0.62	-0.15	28.71	6.44
Mohawk Valley											
Utica	75	36	55	3	40	1510	-107	1.25	0.03	25.41	-2.08
Champlain Valley											
Plattsburgh	75	33	58	3	64	2002	-97	1.01	0.37	18.96	0.21
St. Lawrence Valley											
Canton	75	35	56	2	48	1843	-44	1.10	0.26	19.94	-0.23
Massena	78	33	59	4	67	2047	77	1.05	0.28	19.41	0.99
Great Lakes											
Buffalo	78	45	65	7	110	2378	64	1.79	1.03	19.44	-0.56
Colden	78	40	61	5	79	1833	-39	0.54	-0.50	20.40	-3.04
Niagara Falls	80	43	65	7	108	2365	48	0.80	0.01	21.35	1.78
Rochester	80	39	64	5	97	2240	-3	0.92	0.29	18.59	1.44
Watertown	78	33	61	6	81	2029	93	0.90	0.20	16.26	0.18
Central Lakes											
Dansville	83	39	61	3	83	2290	41	0.88	0.13	16.23	-2.61
Geneva	82	41	62	4	86	2201	-27	1.06	0.34	18.03	-0.56
Honeoye	83	35	62	3	85	2125	-217	1.03	0.33	22.96	4.57
Ithaca	82	37	60	4	72	1982	-30	1.22	0.42	20.77	0.69
Penn Yan	83	37	64	6	100	2341	113	0.84	0.12	16.34	-2.25
Syracuse	83	40	64	5	98	2480	216	1.43	0.57	18.70	-2.46
Warsaw	76	42	60	6	73	1774	55	0.96	0.07	23.74	1.66
Western Plateau											
Alfred	79	40	61	7	76	1650	-45	0.86	0.06	22.44	1.62
Elmira	83	34	61	4	82	2191	67	0.86	0.16	15.34	-3.51
Franklinville	78	34	59	6	66	1696	139	0.80	-0.11	26.81	4.52
Sinclairville	78	43	62	7	87	1983	222	1.22	0.17	26.43	1.37
Eastern Plateau											
Binghamton	78	41	60	4	73	2130	76	1.16	0.39	22.12	2.15
Cobleskill	78	34	58	2	60	1948	37	0.53	-0.31	22.89	1.36
Morrisville	77	42	59	4	61	1852	34	1.18	0.27	24.21	2.61
Norwich	79	35	57	2	56	1938	25	1.18	0.34	28.34	6.96
Oneonta	79	37	58	4	59	2002	251	1.18	0.36	22.29	-0.55
Coastal											
Bridgehampton	83	43	64	3	98	2549	147	0.26	-0.51	24.16	3.20
New York	82	55	69	5	136	3317	124	0.62	-0.14	27.58	5.49

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WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, October 4th, 2009

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	***Low***	***Avg***	***DFN*[1]**	***Week***	***YTD*[2]**	***DFN***	***Week***	***DFN***	***YTD***	***DFN***
Hudson Valley											
Albany	71	41	55	-2	40	2515	81	0.94	0.31	25.79	5.81
Glens Falls	68	34	51	-3	22	2104	-2	2.25	1.60	22.82	2.99
Poughkeepsie	73	37	57	0	52	2665	97	0.42	-0.28	29.13	6.16
Mohawk Valley											
Utica	66	33	46	-6	7	1517	-124	3.64	2.55	29.05	0.47
Champlain Valley											
Plattsburgh	66	31	50	-4	17	2019	-114	1.52	0.91	20.48	1.12
St. Lawrence Valley											
Canton	68	29	49	-4	23	1870	-48	1.35	0.57	21.58	0.63
Massena	66	34	52	-2	28	2075	74	1.09	0.40	20.50	1.39
Great Lakes											
Buffalo	67	42	54	-4	33	2411	46	4.68	3.98	24.12	3.42
Colden	65	37	50	-5	19	1852	-58	2.79	1.85	23.19	-1.19
Niagara Falls	69	39	54	-3	36	2401	32	1.71	1.01	23.06	2.79
Rochester	67	41	53	-4	31	2271	-25	1.71	1.13	20.30	2.57
Watertown	69	34	52	-2	30	2059	85	1.46	0.81	17.72	0.99
Central Lakes											
Dansville	69	37	52	-5	30	2326	27	1.14	0.46	17.44	-2.08
Geneva	68	41	52	-4	28	2229	-47	1.18	0.48	19.21	-0.08
Honeoye	68	41	52	-6	26	2151	-247	1.20	0.50	24.16	5.07
Ithaca	69	38	51	-4	20	2002	-51	1.48	0.71	22.25	1.40
Penn Yan	68	38	52	-4	28	2369	93	0.76	0.06	17.10	-2.19
Syracuse	71	42	53	-3	33	2513	199	1.38	0.59	20.08	-1.87
Warsaw	64	37	49	-4	16	1790	40	2.53	1.71	26.27	3.37
Western Plateau											
Alfred	66	36	51	-3	20	1670	-56	1.63	0.88	24.07	2.50
Elmira	69	36	52	-4	21	2212	45	0.44	-0.23	15.78	-3.74
Franklinville	65	33	49	-4	15	1711	126	1.67	0.81	28.48	5.33
Sinclairville	65	34	50	-4	17	2000	205	1.72	0.74	28.15	2.11
Eastern Plateau											
Binghamton	67	37	51	-4	23	2153	60	1.04	0.34	23.16	2.49
Cobleskill	68	39	52	-3	25	1973	26	1.14	0.38	24.03	1.74
Morrisville	66	41	50	-3	19	1871	21	2.67	1.82	26.88	4.43
Norwich	71	37	50	-4	17	1955	8	1.77	0.99	30.11	7.95
Oneonta	69	38	51	-2	21	2023	241	1.24	0.47	23.53	-0.08
Coastal											
Bridgehampton	73	38	58	-2	57	2606	139	2.73	1.98	26.89	5.18
New York	74	49	62	-2	85	3402	119	1.28	0.58	28.86	6.07

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WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, October 11th, 2009

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	***Low***	***Avg***	***DFN*[1]**	***Week***	***YTD*[2]**	***DFN***	***Week***	***DFN***	***YTD***	***DFN***
Hudson Valley											
Albany	69	34	55	2	38	2553	87	0.41	-0.22	26.2	5.59
Glens Falls	69	32	53	3	27	2131	2	0.88	0.25	23.7	3.24
Poughkeepsie	72	33	56	3	47	2712	107	0.88	0.19	30.01	6.35
Mohawk Valley											
Utica	64	34	47	-2	4	1521	-136	1.87	0.88	30.92	1.35
Champlain Valley											
Plattsburgh	63	38	52	2	18	2037	-119	0.45	-0.11	20.93	1.01
St. Lawrence Valley											
Canton	62	35	49	-1	7	1877	-63	1.29	0.54	22.87	1.17
Massena	62	35	52	3	19	2094	72	0.77	0.14	21.27	1.53
Great Lakes											
Buffalo	63	38	51	-4	13	2424	21	1.5	0.83	25.62	4.25
Colden	61	39	48	-4	2	1854	-83	1.53	0.69	24.72	-0.5
Niagara Falls	62	33	51	-4	16	2417	9	0.58	-0.05	23.64	2.74
Rochester	62	40	51	-4	15	2286	-48	0.55	-0.01	20.85	2.56
Watertown	62	40	52	2	17	2076	76	0.99	0.36	18.71	1.35
Central Lakes											
Dansville	65	36	50	-4	11	2335	-2	0.79	0.16	18.17	-1.98
Geneva	62	39	52	-2	16	2245	-65	0.8	0.15	20.01	0.07
Honeoye	65	38	51	-4	15	2166	-273	0.52	-0.12	24.68	4.95
Ithaca	63	35	50	-2	12	2014	-69	0.34	-0.43	22.59	0.97
Penn Yan	63	38	53	0	26	2395	85	0.54	-0.11	17.64	-2.3
Syracuse	65	36	54	0	31	2544	192	0.68	-0.06	20.76	-1.93
Warsaw	58	36	47	-4	2	1792	20	1.6	0.83	27.87	4.2
Western Plateau											
Alfred	62	36	49	-1	6	1676	-73	0.85	0.15	24.92	2.65
Elmira	64	31	52	0	24	2236	38	0.08	-0.55	15.86	-4.29
Franklinville	61	34	47	-3	1	1712	107	1.28	0.44	29.76	5.77
Sinclairville	61	37	49	-3	3	2003	184	0.94	0.03	29.09	2.14
Eastern Plateau											
Binghamton	61	38	51	-2	15	2168	48	0.43	-0.21	23.59	2.28
Cobleskill	67	35	52	1	18	1991	19	0.67	-0.03	24.7	1.71
Morrisville	62	34	51	1	14	1885	12	1.3	0.53	28.18	4.96
Norwich	66	32	50	0	12	1967	-3	0.74	0.01	30.85	7.96
Oneonta	65	33	51	2	15	2038	234	0.65	-0.12	24.18	-0.2
Coastal											
Bridgehampton	72	37	59	3	64	2670	153	0.33	-0.37	27.22	4.81
New York	76	50	63	4	94	3496	142	0.12	-0.53	28.98	5.54

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