



# New York Berry News

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## What's Inside

1. Currant Events
  - a. NYSAES Celebrates its 125th Anniversary with an Open House on September 15<sup>th</sup>
  - b. Small Farm Census Data Needed!
  - c. NYFVI Seeks Producers for Grant Review Panels
  - d. Governor Spitzer Joins "Big Four" Governors to Push Agricultural Priorities
  - e. August 5<sup>th</sup> -11<sup>th</sup> Proclaimed National Farmers Market Week
  - f. USDA Announces Colony Collapse Disorder Research Action Plan
  - g. Soil Health/ Cover Crop Twilight Meeting
  - h. New York Winter Wheat, Oat Production Down
2. The Last Straw: Winter Mulches for Strawberry Crops - Cathy Heidenreich
3. Currant Cane Blight - A Fiend from the Past - Kerik Cox
4. - NYSAES Raspberry Field Day Highlights - Cathy Heidenreich
5. Raspberry Variety Review: Old Reliable and New Potential - Courtney Weber
6. Weather Reports

**I**t's raining! Hurrah! For western New York, the welcome relief from what looked to be shaping up as a serious drought came this past week with 2 days of intermittent rainfall totaling almost 1.5 inches.

We aren't in the clear just yet, and some of the damage was all ready done. Strawberries escaped relatively unscathed, with less than usual gray mold to boot. Raspberries, however, did not fare as well. Though also relatively free of disease, fruit size was smaller than average. Raspberry harvest is winding down now just as blueberry harvest is winding up!

Feature articles this month include an article on strawberry mulches in light of a 20% drop in wheat and oat production this year in the state, an article on a newly emerging disease of currants by Dr. Kerik Cox, highlights from the Geneva Raspberry Field Day, and a raspberry variety review, courtesy of Dr. Courtney Weber.

## LETTERS TO EDITOR

Please note the weather data for the week ending June 17<sup>th</sup>, 2007, listed on page 24 of last month's issue, was not correct. The correct data is included in this month's issue. Many thanks to Erik Hancock for noticing the growing degree day totals for that week had dropped below the previous week's. Good eye, Erik!

Thanks also to Bill Gliniecki for sharing his insights on bird control. Bill reports his major bird problems in blueberries are starlings, red-winged blackbirds, turkeys and sand sparrows. He confirms its best to change tactics often, and use more than one tactic at a time. Bill's control arsenal includes red and silver foil (flash) tape, which he uses in large quantities and finds most successful, scare-eyes, motion owl/distress call unit, windmills, people making noises and whistler and banger pistols). One note of caution, Bill had a very unexpected grass fire in his blueberry planting this summer, where several feet of alleyway burned before the fire was noted and extinguished. After much investigation he wonders if the reflective tape coupled with the hot, dry weather we've been having may not have been the cause...

## CURRENT EVENTS

**August 8, 2007.** *Soil Health/Cover Crop Twilight Meeting*, NYSAES, Geneva, NY. More information in news brief below.

**August 10-12, 2007.** *Northeast Organic Farming Association (NOFA) 33 Rd Annual Summer Conference*. - "A Celebration of Sustainable Living" at Hampshire College in Amherst, MA. For the full schedule of activities and further information go to [www.nofamass.org](http://www.nofamass.org), or contact Julie Rawson at (978) 355-2853 or [julie@nofamass.org](mailto:julie@nofamass.org).

**August 11-15, 2007.** *National Farmers Market Week*. See proclamation below.

**August 14-15, 2007.** *NASGA Summer Tour*, Niagara Falls Canada and Niagara region of New York. For more information contact Kevin Schooley at [kconsult@allstream.net](mailto:kconsult@allstream.net) or visit [www.nasga.org](http://www.nasga.org).

**September 15, 2007.** *New York State Agricultural Experiment Station 125<sup>th</sup> Open House for the public*, Geneva, New York. For more information see news brief below or contact Gemma Osborne - [gro2@cornell.edu](mailto:gro2@cornell.edu).

**October 5-6, 2007.** *US Highbush Blueberry Council Fall Meeting*, Crowne Plaza Northstar Hotel, Minneapolis, Minnesota. For more information: <http://www.blueberry.org/calendar.htm>.

**October 13-14, 2007.** *Northeast Small Farm and Rural Living Expo*, Ulster County Fairgrounds, New Paltz, NY. For more information see news brief below or go to: [www.smallfarmexpo.org](http://www.smallfarmexpo.org).

# THE NYS AGRICULTURAL EXPERIMENT STATION CELEBRATES ITS 125TH ANNIVERSARY WITH AN OPEN HOUSE ON SEPTEMBER 15<sup>th</sup>

Linda McCandless, Communications Services, New York State Agricultural Experiment Station, Geneva, NY.  
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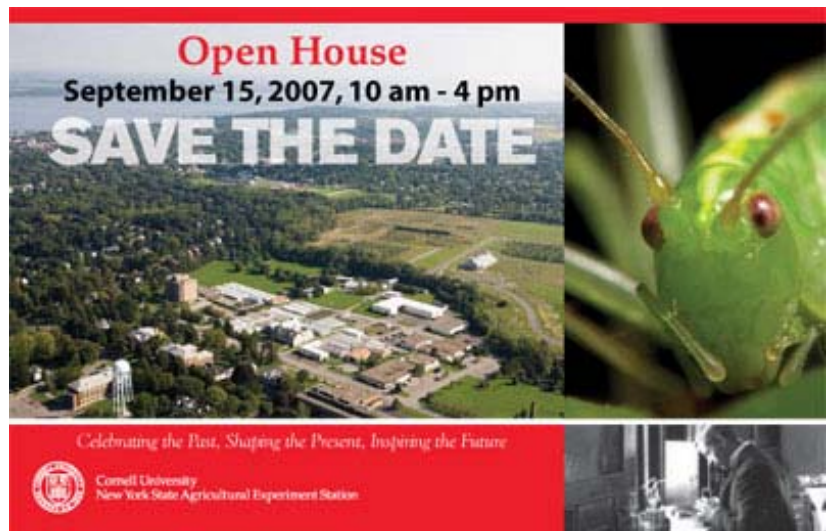
**G**ENEVA, NY: Healthy food and healthy plants meet healthy people on a healthy planet at an Open House to celebrate the 125th anniversary of the New York State Agricultural Experiment Station (NYSAES) in Geneva, NY, on Saturday, September 15, from 10 a.m. - 4 p.m. The event is free and open to the public. Enjoy exotic butterflies and other live insects; tours of labs, farms, and the Cornell Agriculture and Food Technology Park; tractors and heirloom gardens; wine, cider and jam tastings; a farmers' market, and more.

Cornell University scientists at the Station will use interactive exhibits and field tours of cutting-edge research and outreach to showcase how their work impacts agriculture, food, and bio-based industries in New York. There will be hands-on exhibits for children of all ages while the contributions to agriculture that researchers at the Station have made over the years will be highlighted in historical tours and displays.

"Everyone is welcome to come and participate in the celebration," said Station director Thomas J. Burr. "We were established by an act of the state legislature to promote agriculture in New York through scientific investigation, and have been working to do just that in New York ever since. The Station Open House is our opportunity to show the public some of the current research and outreach that furthers this legacy." The Geneva Experiment Station officially opened its doors in 1882.

The Open House will include exhibits from the departments of horticultural sciences, entomology, plant pathology, and food science and technology. Participating partners include the USDA-ARS, the Cornell Agriculture and Food Technology Park, NYS Ag & Markets, the NYS Farm Bureau, the NYS Seed Laboratory, Integrated Pest Management (IPM), the NYS wine industry, the Strong Museum, and others.

Since becoming part of Cornell in 1923, NYSAES has gained national prominence as a center for research focused on the production, protection, and utilization of fruit and vegetable crops, and has generated many billions of dollars for the New York State economy. To learn more, visit <http://www.nysaes.cornell.edu>.



## SMALL FARM CENSUS DATA NEEDED!

**T**he National Agricultural Statistics Service (NASS) is calling all small farmers to sign up to receive a census data form. It is often difficult for the NASS to acquire statistics from small farms, yet accurate and comprehensive small farm data can provide important information to local communities, businesses, government agencies and others to make critical decisions about the future of farming and rural America. People can sign up by calling 1.800.892.1660 between 8am and 4:30 pm MT, or online at [www.nass.usda.gov/counts](http://www.nass.usda.gov/counts). The deadline for this years sign up is August, 2007.

## **NYFVI SEEKS PRODUCERS FOR GRANT REVIEW PANELS**

**A**ctive farmers and producers are encouraged to use their agricultural knowledge and leadership to help the New York Farm Viability Institute (NYFVI) select proposals to fund under the Institutes grant programs. NYFVI seeks producers for the following grant application review panels: fruit, vegetables, livestock, dairy, organic dairy, green industry and field crops. Review panels are created as the volume of applications within that agricultural sector or commodity warrants them. Review panels will meet, in person or via phone conference, this fall. Applicants for review panels may be asked to participate in a selection interview. For more information about becoming a grant review panelist, contact New York Farm Viability Institute at (315) 453-3823.

NYFVI is a nonprofit, farmer-led organization that directs and funds research projects that result in increased profits on New York farms. The Institute supports projects that focus on business management, marketing, production issues, technology adoption, outreach education and more across the diverse agricultural sectors, farm sizes and production practices in the state.

Projects are selected through a competitive application process. Proposals are reviewed and ranked by active producers within the related agricultural sector, then brought before the board of directors for approval and funding amount decisions. The Institutes seven-member volunteer board of directors is comprised of active agricultural producers. All funded projects must include farmer participation in identifying needs, developing the project, implementing research or evaluation success.

## **GOVERNOR SPITZER JOINS "BIG FOUR" GOVERNORS TO PUSH AGRICULTURAL PRIORITIES**

*Jessica A. Chittenden, New York State Department of Agriculture & Markets News*

**G**overnor Eliot Spitzer joined California Governor Arnold Schwarzenegger, Florida Governor Charlie Crist, and Texas Governor Rick Perry in calling on the United States Congress to act on issues of importance to the agricultural economies of the country's four most populous states.

The governors' letter lays out six priorities for consideration as Congress deliberates on the 2007 Farm Bill. The issues include: increased funding specialty crop programs; protection for invasive species; crop insurance; funding for conservation programs; flexibility in administration of nutrition programs; and support for organic agriculture.

"Together we represent a substantial segment of the nation's agricultural economy," said Governor Spitzer. "As our leaders in Washington consider the 2007 Farm Bill, we have joined together to speak with one voice on a critical issue that affects the jobs and lives of our citizens. These six priorities along with our number one priority of protecting the economic well-being of New York's dairy farmers will help to build a solid foundation to strengthen and secure the state's agriculture sector into the 21st Century"

The "Big 4" states represent the largest agricultural economies in the country -- representing more than one third of the nation's farmers, more than 174 million acres of cropland, and more than \$60 billion in annual revenue.

"I hope that this initial effort to influence Congress on issues of critical importance to our states will allow for similar future bipartisan collaboration with the 'Big 4' Governors," Governor Spitzer added.

This effort follows Governor Spitzer's June 7 letter to New York's congressional delegation outlining his farm bill priorities for the state as well as his announcement earlier this year of \$50 million in aid to New York State's struggling dairy farmers who suffered record low dairy prices during the 2006 calendar year.

A copy of the letter may be viewed at. <http://www.agmkt.state.ny.us/AD/BigFourFarmBillLetter.pdf>



UNITED STATES  
DEPARTMENT OF AGRICULTURE  
Office of the Secretary  
Washington, D.C. 20250

NATIONAL FARMERS MARKET WEEK  
August 5-11, 2007

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By the Secretary of Agriculture of the United States of America

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A PROCLAMATION

**WHEREAS** farmers markets are important, nationwide outlets for agricultural producers, providing them with increased marketing opportunities; and

**WHEREAS** more than 4,300 farmers markets across the country offer consumers farm-fresh, affordable, convenient, and healthy products such as: fruits, vegetables, cheeses, herbs, fish, flowers, baked goods, meat, and much more; and

**WHEREAS** farmers markets serve as integral links among urban, suburban, and rural communities, affording farmers and consumers the opportunity to interact; and

**WHEREAS** the popularity of farmers markets continues to rise, as more and more consumers discover the joys of shopping for unique ingredients sold direct from the farm, as well as the pleasure of buying familiar products in their freshest possible state; and

**WHEREAS** farmers markets support local anti-hunger initiatives, through donations of unsold food and food products to programs that feed needy individuals and families; and

**WHEREAS** our Nation's farmers, while providing for our needs, are among the best stewards of our land; and

**WHEREAS** the United States Department of Agriculture strongly supports and promotes the development, operation, and expansion of farmers markets and other direct-to-consumer marketing activities for agricultural producers;

**NOW, THEREFORE**, to further the awareness of farmers markets and of the contributions farmers make to daily life in America, I, Mike Johanns, Secretary of Agriculture of the United States of America, do hereby proclaim the week of August 5-11, 2007, National Farmers Market Week. I encourage the people of the United States to celebrate the benefits of farmers markets and the bountiful production of our Nation's farmers with appropriate observances and activities.

**IN WITNESS WHEREOF**, I have hereunto set my hand this 8<sup>th</sup> day of May 2007, the two-hundred and thirty-first year of the Independence of the United States of America.

A handwritten signature in black ink, appearing to read "Mike Johanns".

MIKE JOHANNIS  
Secretary



# USDA ANNOUNCES COLONY COLLAPSE DISORDER RESEARCH ACTION PLAN

Kim Kaplan, Agricultural Research Service, USDA, (301) 504-1637, [kim.kaplan@ars.usda.gov](mailto:kim.kaplan@ars.usda.gov)

**W**ASHINGTON, July 13, 2007--U.S. Department of Agriculture Under Secretary for Research, Education and Economics Gale Buchanan today announced that USDA researchers have finalized an action plan for dealing with colony collapse disorder (CCD) of honey bees. The plan can be read at [www.ars.usda.gov/is/br/ccd/ccd\\_actionplan.pdf](http://www.ars.usda.gov/is/br/ccd/ccd_actionplan.pdf)

"There were enough honey bees to provide pollination for U.S. agriculture this year, but beekeepers could face a serious problem next year and beyond," Buchanan said. "This action plan provides a coordinated framework to ensure that all of the research that needs to be done is covered in order to get to the bottom of the CCD problem."

The action plan coordinates the federal strategy in response to CCD. It addresses four main components: (1) survey and data collection needs; (2) analysis of samples to determine the prevalence of various pests and pathogens, exposure to pesticides, or other unusual factors; (3) controlled experiments to carefully analyze the potential causes of CCD; and (4) developing new methods to improve the general health of bees to reduce their susceptibility to CCD and other disorders.

Four possible causes for CCD are identified in the plan: (1) new or reemerging pathogens, (2) new bee pests or parasites, (3) environmental and/or nutritional stress, or (4) pesticides. Research will focus on determining which of these factors are contributing causes of CCD, either individually or in combination.

CCD became apparent as a problem beginning in the winter of 2006-2007 when some beekeepers began reporting losses of 30-90 percent of their hives. While colony losses are not unexpected during winter weather, the magnitude of loss suffered by some beekeepers was highly unusual.

There is currently no recognizable underlying cause for CCD. The main symptom is finding no or a low number of adult honey bees present with no dead honey bees in the hive. Often there is still honey in the hive and immature bees (brood) are present.

Pollination is a critical element in agriculture, as honey bees pollinate more than 130 crops in the United States and add \$15 billion in crop value annually.

The research action plan was developed by a CCD Steering Committee, chaired by Kevin Hackett, USDA's Agricultural Research Service (ARS) national program leader for bees and pollination; H.J. Rick Meyer, national program leader for plant and animal systems for USDA's Cooperative State Research, Education and Extension Service (CSREES); and Mary Purcell-Miramontes, national program leader for biobased pest management, entomology and nematology for CSREES. The committee also included other federal and university experts.

Even before the completion of this research plan, considerable research efforts have begun to be redirected to deal with CCD.

## SOIL HEALTH/ COVER CROP TWILIGHT MEETING

*Gates Research Farm West, Geneva, NY*

*August 8, 2007, 4:30 to 7:00pm*

**A**fter attending Empire Farm Days 07, stop by and join us for a light supper and an evening of discussion about managing soil health through the use of cover crops, reduced tillage systems and crop rotations at the Gates Research Farm West. The first stop will be at a buckwheat demonstration plot with Thomas Bjorkman. Buckwheat can be used effectively as a short-cycle summer cover crop to fit small windows between planting in order to improve soil health and suppress weeds. Just a few yards away is the Gates Farm Long-Term Soil Health Research Site (14-acres) which consists of 72 plots representing three tillage (no-till/ridge-till, strip-till, and conventional tillage systems), three cover crop (no cover, rye, and vetch), and two rotation treatments. One rotation emphasizes continuous high-value vegetable production with a rotation of bean, beet, sweet corn, and cabbage from 2003 through 2006, whereas the second rotation includes a season long soil-building crop (bean, field corn, small grain/clover, and sweet corn from 2003 through 2006). This year, all 72 plots have been planted to snap bean cv. 'Caprice'. This will enable yield comparisons to be made across all treatments to assess the effect of the different tillage, cover crop and rotation combinations used over the past three years on soil health as measured using our Cornell Soil Health Test. Plot harvesting will be underway!

### Schedule

- 4:30 pm Buckwheat demonstration plot – Thomas Bjorkman, Dept. of Horticultural Sciences
- 5:00 pm Light supper – sandwiches, chips, cookies, drinks
- 5:30 pm Soil Health Research Site (background, results, and 2007 observations) – Beth Gugino and George Abawi, Dept. of Plant Pathology and other Cornell Soil Health Team representatives
- 6:00 pm Tour plots and check out small plot research equipment – maps will be provided
- 6:30 pm Facilitated farmer to farmer discussion about soil health management practices: successes and failures

**Directions from Empire Farm Days:** From Rodman Lott and Son Farms turn south on NY-414 toward Martin Road (approx. 1.9 miles). Turn right onto Yellow Tavern Road/ CR-121 and go for 5.3 miles. Make a slight right onto NY-96A N and follow towards Geneva (2.9 miles). Turn left onto NY-5W/US-20 W through Geneva (6.1 miles). Turn right onto Gates Road. After approx. 0.6 miles the research site will be on your left. Total distance about 18 miles. Map available to download at <http://soilhealth.cals.cornell.edu>.

**Directions from the West:** From Canandaigua, go about 10 miles East on NY-5/US-20. Turn left onto Gates Rd. (Gates Rd. is about 2 ½ miles West of Geneva.) After approx. 0.6 miles the research site will be on your left.

**Directions to Gates Research Farm West from Experiment Station:** From the intersection of PreEmption Rd. and Co. Rd. 6, just west of the Station, take Castle Road (County Rd. 4) west for approx. 2.4 miles. Turn left onto Gates Road. The research site will be on your right.

The **alternative location** in case of inclement weather will be the pavilion behind Jordan Hall at the New York State Agricultural Experiment Station. Signs will be posted at Gates Research Farm to notify a change in venue. Drive north past the Gates Research Farm until the road ends. Turn right onto Castle Rd (County Rd 4) go through 1<sup>st</sup> light at PreEmption Rd. Jordan Hall will be on the left. Park behind building.

For additional information please contact George Abawi at 315 787-2374, [gsa1@cornell.edu](mailto:gsa1@cornell.edu); Beth Gugino at 315 787-2412, [bkg9@cornell.edu](mailto:bkg9@cornell.edu); or Carol MacNeil at 585 394-3977 ext. 406, [crm6@cornell.edu](mailto:crm6@cornell.edu).

Visit the Cornell Soil Health website (<http://soilhealth.cals.cornell.edu>) for a schedule of other soil health related twilight meetings, field days and events scheduled for the 2007 season.

**(Editor's Note:** While this meeting does not specifically deal with berry crops, many of the soil health principals and techniques are directly applicable to small fruit production. The Soil Health Team is also interested in developing a similar soil health data base for fruit crops and it's associated recommendations. The team welcomes your attendance/participation.)

## NEW YORK WINTER WHEAT, OAT PRODUCTION DOWN

**B**ased on the results of a survey conducted July 1, New York winter wheat and oat production is expected to be lower than a year ago, according to Stephen Ropel, Director of USDA's National Agricultural Statistics Service, New York Field Office.

Winter wheat production for the Empire State is estimated at 4.59 million bushels, down 21 percent from the 5.80 million bushels produced in 2006. Yields are forecast at 51 bushels per acre, down 1 bushel from the June 1 forecast and 10 bushels below last year. Harvested acreage is projected at 90,000 acres, down 5 percent from 2006.

## THE LAST STRAW - WINTER MULCHES FOR STRAWBERRY CROPS

*Cathy Heidenreich, Small Fruit Extension Support Specialist, Department of Horticulture, Cornell University's College of Agriculture and Life Sciences, Ithaca, NY 14856*

**Y**ou are probably thinking July is much too early for an article on mulching strawberries, but there is method to my madness. Straw may be higher demand, shorter in supply, and higher in price this year as NY wheat and oat production is down by 21% (see news brief above).

Also, on occasion the supplier's ability to deliver product may change. One grower reported his straw supplier recently switched from round bales to squares, which would not fit his bale chopper. The grower was not aware of this change until he called to place his order earlier this month. He is searching for a new supplier.

Be sure to check now with your local supplier as to pricing and availability of straw for mulching your strawberries. It may be advisable to lock in your order/pricing soon to ensure sufficient straw at a reasonable price later on in the season.

## **Protecting Strawberries from Winter Injury**

Strawberries are less cold-tolerant than other berries typically grown in the Northeast. Cold temperatures, coupled with desiccating winter winds, may cause cold injury to strawberries, especially those grown on raised beds.

Winter injury depends on several factors which may be categorized into 2 main groups: plant characteristics and environmental conditions. Plant characteristics include such things as cultivar, plant age, nutritional status, production method (i.e. raised bed vs. matted row vs. annual plasticulture production) and autumn hardening. Environmental factors include autumn hardening conditions (temperature, moisture, light), amount of snow cover, timing and severity of minimum temperatures, number of freeze events, and type and amount of mulch being used.

Strawberries begin their fall acclimation process in response to falling temperatures and shortening day lengths in autumn. This process occurs over a 6 to 8-week period. Injury occurs for most cultivars when crown temperature (*not air temperature*) reaches 23°F. Death may occur at crown temperatures of 4°F or below. Damage increases and yield decreases proportionally as the temperature falls.

Research has shown cultivars differ only slightly in hardiness; a matter of a few degrees in some instances. In some years, however, these few degrees may mean a substantial loss in yield.

Mulching is a common practice to protect strawberries during cold winter months in areas where snow cover is not sufficient to protect plants. Mulches protect strawberries from cold temperatures by providing insulation, protecting strawberries from desiccation, and preventing injuries associated with soil heaving which often occurs during severe temperature swings.

### **What's the Best Mulch for Strawberries?**

Snow cover, of course is the best protection for strawberries. Snow depths over 6 to 8 inches keep crowns warm even to temperatures as low as -25°F. If you are located in an area where your snow cover consistently meets or exceeds this depth, all is well. Consider adding snow fence, however, to reduce drifting and prevent desiccation from prevailing winds. Unfortunately, snow cover is not dependable in most areas.

Straws are the most commonly used strawberry mulches. Straws are coarse-textured and do not weigh down plants like hay and other finer-textured materials. Wheat, oat, rye, rice, pine and Sudan grass straws have been used successfully as strawberry mulches. Straws more coarse than Sudan grass are not recommended. Both rye and Sudan straws are good, but wheat straw may be preferable as it is more resistant to compaction. Oat and barley straws break down more quickly and do not offer as much insulation. Straws should be clean, dry, weed seed free, and contain a minimum of grain seed.

How much mulch is typically needed? A 2-3 inch covering or 2 to 3 tons per acre minimum is recommended for areas with regular snow fall and moderate temperatures. On matted row plantings this is equivalent to approximately 300 avg. wt. small bales per acre. Raised beds, and windy, exposed sites may need twice that rate per acre (4 to 5 inches or 4 to 5 tons/acre) to achieve the same results.

Row covers may be used for winter protection in the Mid-Atlantic States and further south, but do not provide sufficient protection for strawberries in the Northeast. However, row covers are used in the Northeast in conjunction with straws to protect overwintering annual plasticulture strawberries.

### **Producing Straw Mulches on Farm**

The ability to keep straw clean during harvest is one of the key steps in reducing weed problems in new or established plantings. Contaminated straw is often the source of Canada thistle, grain from straw, or difficult weed seeds in a planting.

Some growers may prefer to produce their own mulch on farm. Sufficient acreage and planting, harvesting, and bailing equipment must be secured before undertaking straw production. Adequate storage to keep straw clean and dry will until use will also be necessary.

The benefits of producing your own straw on farm may be substantial. Straw crop(s) of choice may be planted. For example, rye may be harvested prior to seeding stage or before persistent weeds set seed. Rye straw also contains substances that suppress germination of certain weed seeds. All straw crops may be harvested at stages where minimum contamination from grain or weed seeds can occur.

In addition, grain and/or extra straw can be sold to offset production costs. Remaining stubble is plowed under and adds organic matter to the soil.

## References:

1. Funt, R.C. 1999. *Weed Control in Matted Row Strawberry Production Systems: August to December*. In: Ohio Fruit ICM News Vol. 3. No 39. pg. 2.
2. Pritts, M.P. and Handley, D. 1988. *Temperature Regulation: Mulches, Row Covers, Frost Protection, and Evaporative Cooling*. Chapter 5 in: *Strawberry Production Guide for the Northeast, Midwest and Eastern Canada*. Northeast Regional Agricultural Engineering Service Publication NRAES-88, Cornell Cooperative Extension, Ithaca, NY.
3. Schloemann, S. 2006. *Winter Mulch for Strawberries*. In: UMass Berry Notes Vol.18, No.16, November 16,2006.

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Questions or Comments about the New York Berry News?

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Check out the NYSAES Tree Fruit and Berry Pathology web site at:  
[www.nysaes.cornell.edu/pp/extension/tfabp](http://www.nysaes.cornell.edu/pp/extension/tfabp)

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## CURRENT CANE BLIGHT: A FIEND FROM THE PAST

*Kerik Cox, Assistant Professor, Department of Plant Pathology, Cornell University's New York State Agricultural Experiment Station, Geneva, NY, and Steven A. McKay, Fruit Extension Educator, Hudson Valley Fruit Program, CCE Columbia County, Hudson, NY.*

Not too long after I came on board last fall, I received a call from Steven McKay, Cooperative Extension Educator for small fruits and grapes for the Hudson Valley Region, about a mysterious die-off of currants taking place in the Hudson Valley. Steven showed me several farms with extensive die back, primarily on red currants. We took a lot of pictures, video content, and infected samples. The samples were dissected and isolations were made in an attempt to identify the culprit. We're still in the process of confirming the identity of the fungal perpetrator, but this endeavor is purely academic from the perspective of the New York currant grower.

Interestingly, the disease was also found at two locations at the Geneva Experiment Station, and could be present at other locations in the Finger Lakes region. The disease may continue to be a problem in New York. To better prepare New York currant growers for the threat, I've summarized the key information on these epidemics from "old" Experiment Station Bulletins and limited information from "modern" sources on currant cane diseases.

### **BRIEF HISTORY/TIMELINE**

- From 1891- 1913, a destructive blight of currants was reported by growers in the Hudson Valley. During this time, Cornell scientists conducted extensive investigations into the currant blight. It was estimated between 25-50% of North American currants were lost to the disease. Unfortunately, no effective means of managing the disease was discovered.
- As early as April 1917, Ribes quarantine and eradication legislation was beginning to be put into effect in an effort to manage white pine blister rust. It wasn't until 1998 that Ribes planting restrictions for New York were discussed and eventually relaxed in 2003. During this period the disease was not likely to have been a problem.
- Since 2005, a destructive blight of red currants has emerged and is becoming more prevalent in the Hudson Valley. At this time we suspect the blight to be the same disease that was reported in the 1890s, but we are in the process of confirming this suspicion.

### **SYMPTOMS (Sudden wilt and blight of canes)**





Fig. 1. Red currant with blight in late spring early summer



Fig. 2. Several severely affected red currant bushes. Most of the canes shown here are completely dead and brittle.

- Shoots, entire canes, and even whole bushes may appear to suddenly wilt and die from spring to late summer/early fall (Figs. 1 and 2).



Fig. 3. Red currant with infected young canes becoming chlorotic



Fig. 4. Young cane with distal shoot tip blight

- Young canes often become infected at the shoot tips. Leaves of infected canes become chlorotic and completely wilt after final elongation and fruit set (Fig 3). Eventually, leaves may turn brown and necrotic as the young shoot tip begins to die (Fig 4).
- The cortex and pith of young infected shoots is often discolored (light tan) and dying (Fig.5).
- In mature infected canes, the pith becomes completely necrotic (dark brown to black), which often completely decays, leading to hollow canes that easily snap off when handled or during strong winds (Fig.6).



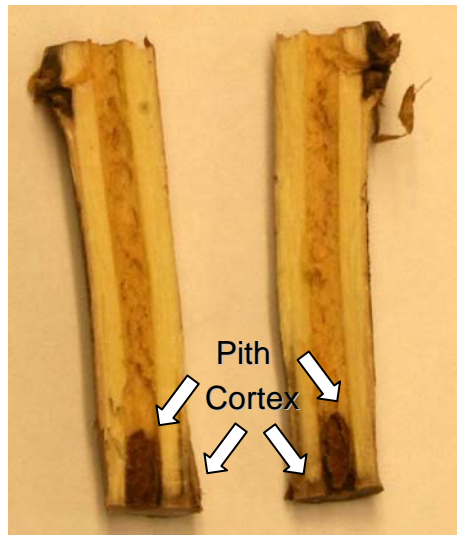


Fig. 5. Cortex and pith browning at margin of infection

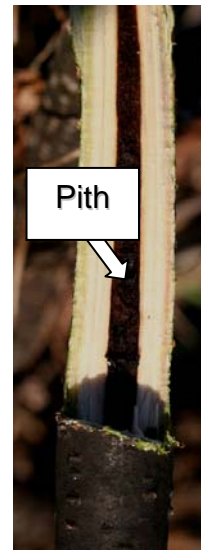


Fig. 6. Pith necrosis down length of currant cane

**PATHOGENS (*Botryosphaeria ribis* is the likely culprit)**

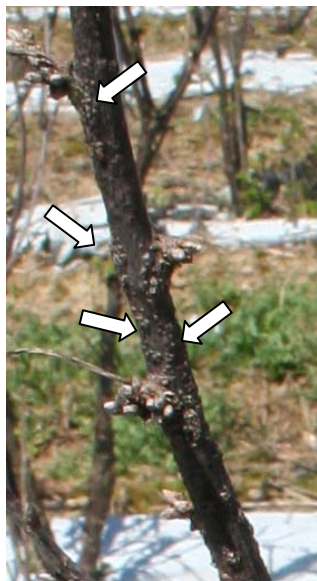


Fig. 7. *Botryosphaeria*-like stromata on dead currant cane



Fig 8. Orange *Nectria* stromata dead currant cane

- The causal organism of the cane blight of the 1890s was proven to be a fungus called *Botryosphaeria ribis*. This fungus produces fairly diagnostic stroma (clusters of small, black, warty bumps) on mature canes from the previous season's infections.
- *Botryosphaeria* fungi are common pathogens of woody perennials causing limb and cane death in many bushberry, tree fruit, and woody vine crops.
- The Tree Fruit and Berry Pathology labs at Cornell have observed putative *Botryosphaeria* stromata on canes in the Hudson Valley and in Geneva (Fig 7). We've isolated fungi from symptomatic plants from both Geneva and the Hudson Valley that match the cultural characteristics of the sterile *Botryosphaeria* described in the 1890s and modern *Botryosphaeria*. Currently, we are attempting to confirm the isolate identity by DNA sequencing.
- Prior to the extensive investigation on the disease in 1911, another fungus, *Nectria cinnabarina*, was thought to cause the disease. This fungus is weakly pathogenic on woody perennials and some sources consider this fungus to be a true cause of disease on currants. At the turn of the 20<sup>th</sup> century, this fungus was often found on currants

declining from the cane blight disease. The presence of coral-colored stromata on dead canes is diagnostic of *Nectria* (Fig. 8), and some sources consider its presence an indicator of *Botryosphaeria* infection.

#### **HOST FACTORS (Red currants are the most impacted)**

- Previous reports and our observations indicate that the disease is more prevalent on red currant (*Ribes rubrum*) varieties. The disease is also reported to occur and has been recently observed on black currants (*Ribes nigrum*) in the Hudson Valley and Connecticut, but in NY plantings, the disease appears to be less devastating on *R. nigrum* varieties.

#### **DISEASE CYCLE (Knowing when to scout and manage)**

- The early 1900s literature suggests that the majority of *Botryosphaeria* infection occurs mid to late summer, but spores of this pathogen are often found between mid May to early June.
- In other bushberry crops, this pathogen infects new growth as early as budbreak and bloom. It stands to reason that the pathogen would also infect currants at the same stages in the spring and earlier summer.
- Initial infection begins with dieback of distal shoot ends in which the *Botryosphaeria* survives during winter (Fig. 4).
- In the following spring (especially for late infected canes) the infection and blight will continue to progress with the onset of vegetative growth, giving the impression that the disease suddenly emerges and kills off the canes without prior warning (Figs. 3 and 4).
- This 'quick kill' phenomenon would also explain why in-season control measures might appear to be ineffective at first.
- Mature infected canes will begin to develop the fungal stromata (Figs. 7 and 8), which develop into infective spore bearing structures in the following spring and summer.

#### **MANAGEMENT (Sanitization is the key -- Chemical control may be possible)**

- Management practices for this disease must be timed to key events in the disease cycle to be of use.
- A potential annual delay between infection and blight symptoms makes it difficult to gauge efficacy of management practices.
- Experiments are underway to evaluate various management practices for this disease. All of the following practices are reported to work, but haven't been tested in NY in recent years.
- Sanitation: To achieve the highest level of control and minimize the spread of the disease in the field, practice all of the following.
  - Postpone winter pruning efforts until May when infected and dead shoots are more readily distinguishable. This will help minimize potential infection sites resulting from winter injured pruning wounds, and reduce potential inoculum for the current season's infections.
  - Scout frequently during the season and remove infected canes and shoots 15 cm below the cessation of dieback or pith browning.
  - Remove any dead distal shoot tips as they represent initial infection events.
  - Sterilize your pruning tools in 10% bleach or 70% ethanol between cuts.
  - If dieback extends into the crown, the entire bush should be removed.
  - Remove and burn all prunings to destroy inoculum. Fungal inoculum can travel great distances. Do not simply move prunings outside of the planting.
- Chemical control: Most sources in the scientific and extension literature indicate that chemical control is ineffective against *Botryosphaeria* diseases of fruit crops. However, a few sources suggest chemical management options for this disease in currants. We are still in the process of evaluating some of these chemical management practices under research conditions.
  - As with many other cane diebacks, it has been suggested that applications of Bordeaux mixture, lime sulfur, and fixed copper to dormant bushes in the early spring to late fall may prevent initial infection and reduce overwintering inoculum.
  - It has also come to our attention that currant growers in New Zealand apply a fungicide called Amistar<sup>®</sup> (Syngenta Crop Protection) at 400mL/Ha immediately after harvest for control of this disease. Amistar<sup>®</sup> applications are reported to be effective for reducing the disease and also promote green leaf retention and, in turn, increased bud size.
  - In the US we don't have an Amistar<sup>®</sup> label for currants. However, the US formulation of Abound<sup>®</sup> (Syngenta Crop Protection) is analogous to the NZ Amistar<sup>®</sup> in formulation and concentration of the active ingredient Azoxystrobin. In fact, this product is actually labeled in NY (EPA Reg. 100-1098, NYSDEC Acceptance 9/16/04) for use on *Botryosphaeria* canker diseases of bushberries (including currants and gooseberries) at a rate of 6.2 to 15.4fl oz per acre. Abound may be applied the day of harvest and has no other restrictions that would prevent one from applying it immediately post harvest.

# RASPBERRY VARIETY REVIEW: OLD RELIABLE AND NEW POTENTIAL

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Raspberries are classified as floricanes (summer) or primocanes (fall) bearing. (A few weak primocane bearing types are described as everbearing, which produce a small 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 Northeastern states.

Primocane varieties fruit on the first year's growth in the fall of the year. Currently, only red varieties 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 floricanes varieties to nearly the whole cane in varieties such as 'Autumn Bliss' and 'Polana'. 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 floricanes bearing with most developed in New York or derived from germplasm from the region. Black raspberries have the potential to be a highly profitable crop for growers in Midwestern states in a diversified production system. However, establishment costs are high and budget projections indicate the breakeven point to come in the second production season, some 26 months after planting. Unfortunately, productivity in currently available varieties can begin to decline after two production seasons due to pest pressure. Typical yields in the region range from 1 to 3 tons per acre compared to 3 to 7 tons per acre for red raspberry, with fruit size generally less than 2.5 grams per berry. Thus, higher demand and prices and/or more productive, disease resistant varieties are needed for the black raspberry to be a viable crop for most growers. Purple raspberries have limited market potential at this time, mainly for u-pick operations and processing.

New raspberry varieties are actively being developed in about 11 public breeding programs around the world with the majority suitable for production in the Midwestern 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' and others). New varieties are released all the time, but the vast majority of them fail to catch on for various reasons including poor adaptability to diverse growing regions, unforeseen disease or insect susceptibility, or fruit characteristics that are unacceptable to the buying public. No variety will work well in all locations, soil types, and production systems, but many have proven useful in many different situations. This list is by no means complete but should address most 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 Midwestern U.S. with only a short late-summer lag in production.

Obtaining high quality planting stock is an important step in developing a successful bramble planting; poor plant material guarantees a poor planting. Plants should be ordered from a reputable source, preferably a nursery that sells plants from "certified" virus-free stock. Certification is an assurance that the plants have been tested by indexing and found free of common viruses. Virus-free plants have the best growth and productivity and will generally live longer and be highly profitable. Field-grown nursery stock has a greater chance of being infected with disease such as crown gall, *Phytophthora*, *Verticillium* or viruses than tissue culture plugs or stock grown from tissue culture.

## RED RASPBERRIES

### **Early Season**

**Boyne** and **Killarney** (sibling varieties from Manitoba) perform very similarly. Both have 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.

### **Fall Bearing**

**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 somewhat dark fruit. It is susceptible to raspberry bushy dwarf virus.

**Autumn Britten** (Great Britain, Patent Pending) is early ripening with large, firm, good flavored fruit. It is taller than Autumn Bliss with better fruit quality but slightly lower yields. It is a day or two later than Autumn Bliss.

**Caroline** (University of Maryland, Plant patent # 10,412) is a large, good flavored, conical fruit. 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.

**Dinkum** (Australia, Plant patent # 9477) is produces early, good flavored, firm fruit. Shelf life can be extended with early picking. Canes are spineless, stout and strongly erect. It is moderately resistant to late yellow rust and susceptible to Phytophthora root rot and raspberry bushy dwarf virus.

**Heritage** (Cornell University-NYSAES) is considered the standard for fall bearing varieties. These tall, rugged canes have prominent thorns and are very high yielding. 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.

**Jaclyn** (University of Maryland, Plant Patent #15647) is an early season variety with large firm berries ripening 2 weeks before Heritage. Plants are vigorous and erect but susceptible to yellow leaf rust. Fruit is dark red and adheres tightly until fully ripe.

**Polana** (Poland, Patent Pending) is a very early season variety that ripens 2 weeks before Heritage. It produces short productive canes with multiple laterals per node. The fruit is medium sized fruit with good flavor. It is susceptible to Verticillium wilt and Phytophthora root rot. It needs extra nitrogen to perform well.

**Ruby** (Cornell University-NYSAES, Plant patent # 7067) is moderately vigorous with good productivity. The primocane crop ripens slightly ahead of Heritage. The fruit is large with a mild flavor. Ruby is susceptible to Phytophthora root rot. The variety is suggested for fresh market or shipping in areas with longer growing seasons. It is susceptible to mosaic virus complex and resistant to late yellow rust and powdery mildew.

### *Greenhouse Production*

**Tulameen** (British Columbia) has been shown to be superior for greenhouse production. It produces very large fruit, and high yields. The fruit is glossy and firm. It is resistant to aphid vector of mosaic virus complex. Plants are not adequately hardy for field production in the Northeast but may be suitable for warmer regions in the Midwest.

## **YELLOW RASPBERRIES**

**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.

**Fallgold** (University of New Hampshire) fruit is medium-sized, yellow with a pink blush, and soft, but has excellent flavor. It is poor for freezing or processing. Canes are very vigorous and produce many suckers. The primocane crop ripens relatively early.

**Golden Harvest** (New York) produces a firm yellow berry with good flavor. The fruit is small and yield potential is moderate. It fruits in the late autumn season similar to Heritage and has good plant vigor.

**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.

## **BLACK RASPBERRIES**

**Allen** (Cornell University-NYSAES) ripens very uniformly so the harvest period is short. Plants are vigorous and moderately hardy. The fruit is firm and good flavored and mediums in size for a black raspberry.

**Black Hawk** (Iowa State University) fruit is small and numerous. This early season variety has fruit that is glossy with good firmness. Plants are vigorous, relatively hardy, and resistant to anthracnose.

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

**Haut** (USDA-ARS, Maryland) fruit is medium large and ripens over a long period. The fruit is dark black and very attractive with good size but somewhat soft. The plants are vigorous with very good productivity.

**Huron** (Cornell University-NYSAES) produces medium large fruit that is firm and glossy. The eating quality is very good. Canes are vigorous moderately hardy and moderately resistant to anthracnose.

**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. The yield is as good as any other variety.

**Mac Black** (Michigan) ripens medium large berries 7-10 days later than most varieties. The fruit is medium large and firm with good quality. Canes are vigorous, erect, and hardy.

**Munger** (Ohio) produces shiny black fruit that is medium to large with good firmness and flavor. It is moderately vigorous with poor cold hardiness.

**New Logan** (Illinois) fruit ripens uniformly so the harvest period is short. The fruit size is relatively small but larger than Black Hawk for the early season. It is resistant to leaf curl virus but susceptible to anthracnose.

## **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.

**Estate** (Minnesota) is more red than purple, large, and round with good flavor. It ripens very late. Plants are tall and thorny. Suckers emerge from the crown, so plants are slow to spread. It has acceptable winter hardiness.

**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.

### *On The Horizon*

There are many new named varieties that are being tested but are not yet available yet from most commercial nurseries. Summer varieties include 'Emily', 'Esta' and 'Claudia' from Maryland and 'Moutere' from New Zealand. Fall bearers include 'Josephine' from Maryland, the early season 'Polka' from Poland, and 'Himbo Top' from Switzerland. Many varieties are available from the west coast programs but have not been tested widely in the east. Most of these have insufficient cold hardiness for much of the east but may work in more southern sections. As always, experiment with new varieties on a small scale first to judge suitability in individual situations.

**Claudia** (University of Maryland, Patent pending) fruit is large and conical with moderate firmness and good flavor, and ripens mid to late season. A late fall crop is common. Produces stout, upright canes but suckers sparingly. It has acceptable cold hardiness for most areas.

**Emily** (University of Maryland, Plant Patent #12,350) has large mid-season fruit with good yield potential. Firm fruit is large with a narrow cavity and mild flavor. It is susceptible to Phytophthora root rot. It has a low chilling requirement and susceptible to fluctuating spring temperatures and is only moderately cold hardy.

**Esta** (University of Maryland, Patent pending) has large conical fruit with a sweet, intense flavor ripen in the early season. Fruit can become soft in hot weather. Needs trellising for ease of picking. Has poor cold hardiness but tolerant to fluctuating spring temperatures. It is resistant to leaf hoppers but susceptible to Phytophthora root rot.

**Himbo Top** (Switzerland) produces good quality, large fruit on primocanes. The fruit is bright red with good flavor. Plants are vigorous and upright and medium in height that will benefit from trellising. Reported to be resistant to Phytophthora root rot.

**Josephine** (University of Maryland, Plant Patent #12,173) fruit is large with average flavor ripening mid-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.

**Moutere** (New Zealand) is an early mid-season floricaner fruiting (summer) type. Fruit is medium to large with medium red color and good shelf life. Plants are vigorous and upright with moderate hardiness. It is resistant to raspberry bushy dwarf virus (RBDV).

**Polka** (Poland) has medium large primocane fruit that ripen in the early season. Widely grown in Europe, it is reported to have good fruit quality and good yields.

## **GENEVA RASPBERRY FIELD DAY HIGHLIGHTS**

*Cathy Heidenreich, Small Fruit Extension Support Specialist, Department of Horticulture, Cornell University's College of Agriculture and Life Sciences, Ithaca, NY 14853*

**T**hirty people braved the much needed rain showers to attend the Geneva Raspberry Field Day on July 19, 2007, hosted by Dr. Courtney Weber, small fruits breeder in the Department of Horticultural Sciences at the New York State Agricultural Experiment Station, Geneva, NY.



Dr. Weber and his team did an excellent job preparing contingency plans should the rain have persisted throughout the afternoon, but just prior to the start of the tour came a break in the clouds, and a rain-free window of opportunity!



They quickly moved their displays from the adjacent barn back out into the field, where attendees were able to enjoy a break in the rain, and a tour of the black raspberry variety planting currently under harvest.



Growers and extension personnel from across the state attended the 3 hour program, which showcased black and red raspberry varieties. All were encouraged to share their questions, comments and insights throughout the event.

The program began with an introduction to black raspberries. Black raspberries have been in the news recently due to their newly discovered, potent, anti-cancer potential. Dr. Weber briefly discussed the new medical findings and the possible impact on black raspberry consumption and production in the US and around the world. He then discussed both the positive and negative aspects of black raspberry production and their potential as a sustainable berry crop in the Northeast.

Dr. Weber is currently leading a project to develop improved black raspberry varieties that would be better suited for production in New York and the Northeast. As a part of this research, existing black raspberry varieties are being evaluated in a variety trial at the Experiment Station. Results from the first two years of that trial were presented, and participants were invited to sample fruits of the various varieties, which were in mid- to late harvest at the time of the field



day. In addition, Dr. Weber discussed his black raspberry breeding program, where known black raspberry varieties are being hybridized with red raspberry to transfer several desirable characteristics to the new black raspberries: thornlessness, upright habit, larger fruit size, higher yield, and disease resistance. After viewing growth habits of the various varieties in the replicated planting, participants were invited to sample each from the harvested fruits on display.

Red raspberry varieties were also a topic of discussion. Dr. Weber shared a red raspberry variety review with attendees (see article following this news brief), and asked them to participate in a taste testing of some as yet unnamed varieties from his raspberry breeding program. The varieties included in the taste test

were from a series of crosses; parent raspberries were also available for tasting to assist in the evaluation.

Some 24 potential varieties, including 22 red, 1 yellow and 2 purple raspberries were among those evaluated. Each variety was rated on a scale of 1 to 5 (5 being best) as to flavor, firmness, color, shape, and overall quality. Dr. Weber will tally the results and include this information when making decisions as to possible new releases or parents for additional crosses. The 2 youngest meeting attendees were interested to learn from Dr. Weber that they were tasting raspberries that only one other person in the world had tasted before the meeting.



The final part of the variety review involved a primocane blackberry trial Dr. Weber is participating in, led by Dr. John Clark of Arkansas. Varieties developed there are out planted in various parts of the country, including New York, for further evaluation before being released. This planting was in its second year and just flowering at the time of the tour. The first fruits should be ripe and ready for evaluation in the next month from this planting.



Other Cornell faculty were also present at the meeting and shared in the program. Dr. Kerik Cox., tree fruit and small fruit pathologist at Geneva, gave an overview of black and red raspberry diseases, their identification, and management, along with a colorful disease management handout with pictures of the various diseases. He led a tour through both red and black raspberry plantings to scout for and discuss various diseases of concern, including anthracnose, raspberry leaf spot, Verticillium wilt, and Phytophthora root rot. All agreed that Gray mold has not been a serious problem in brambles so far this year,



due to the dry weather. Dr. Cox also pointed out an unknown disease of note in the primocane blackberry planting resembling fire blight, a common bacterial disease of apple, which is relatively rare in blackberries. The disease was only evident on the thornless blackberry selections. Isolations are being done in his lab to determine the exact cause of the mystery disease. "Clearly, he said, these (infected) plants would not be varieties of choice as they are so susceptible to the disease."

Another speaker was Dr. Greg Loeb, grape and small fruit entomologist at Geneva, who also led a scouting tour through the plantings. One of the insects he focused on was Tarnished Plant Bug, which he discussed in some detail. He brought along both adult and immature TPB in a vial for all to examine, and also demonstrated scouting techniques for TPB in the field. One of the most frequently asked questions on the tour was "What can I do about my Japanese beetle problem?!"



The difficulty in their control lies in their wide host range and excellent mobility. Adults may be controlled with various products, however, once residues are no longer effective after sprays are made, new beetles move in from other locations. Other insect concerns included raspberry crown and cane borers.

The final topic of discussion for the day was cultural aspects of bramble production. Dr. Marvin Pritts, small fruit horticulturalist and chair of the Department of Horticulture, Ithaca campus, discussed high tunnel production of both raspberries and blackberries. He shared with attendees samples of both 'Jewel' black raspberry and a cultivated blackberry from their research high tunnel in Ithaca. People were amazed at the size of both berries grown under tunnel conditions, especially in comparison with 'Jewel' raspberries from the variety trial in Geneva. Twice the size was the general consensus!

A new raspberry and black berry high tunnel production guide is in the process of being written and should be available for growers in both electronic and paper format in mid- to late August 2007.

Grower Joe Nicholson of Red Jacket Orchards also shared his recent experiences in greenhouse raspberry production. High heating costs were an obstacle, he admitted, but high returns offset those costs. He said they had learned a lot, but there was still more to be done before a profit was realized from such an endeavor. He also mentioned several things they would be doing differently the following season to adjust their production system and help increase those profits.

Also in the crowd were Craig Kahlke, the new post harvest specialist with the Lake Ontario Fruit Team, Steven McKay, ribes specialist and member of the Hudson Valley fruit team, and past and present executive secretaries of the New York Berry Growers Association, Jim Altemus and Paul Baker.

A clap of thunder and drops of rain brought the meeting to a rather swift but successful end. Many thanks to all who organized the tour and also those who participated.



## WEATHER NOTES

### NEW YORK CROP WEATHER SERVICE NOTES

**Week ending June 17th:** Temperatures were fairly close to average, while precipitation was generally below average except for locations that received thunderstorms. The weather pattern during the early part of the week featured a persistent upper level cut off low pressure system that meandered near the New England coast, and a dominant high pressure system across the western and central Great Lakes. Moisture wrapping around the low brought periodic episodes of showers and thunderstorms to portions of east and central New York on Monday and Tuesday mainly during the afternoon and evening hours. The upper low then shifted southward towards the Mid-Atlantic region, allowing high pressure to build in across the state from Wednesday through Friday. By Saturday though, the upper low shifted back into the region which once again resulted in scattered showers and thunderstorms during the afternoon and evening hours. In Albany County, strawberry picking began throughout the area and the berry quality looked good. Harvest also got started in Onondaga County. Size seemed a little small.

**Week ending June 25th:** A cool front came through the region on Sunday, June 17<sup>th</sup> ushering in a Canadian air mass which dominated Monday the 18<sup>th</sup>. On Tuesday the 19<sup>th</sup>, much warmer air came into the area from the southwest bringing oppressive heat and humidity, with high temperatures close to or above 90 in much of the region, with numerous thunderstorms breaking out especially as a cold front approached the region late Tuesday afternoon. High pressure dominated the region most of the rest of the week with cooler temperatures. Rainfall varied widely, heavy rainfall in the Catskills caused a flash flood near Roscoe while Morrisville, southwest of Utica, had only 0.06 inch of rainfall for the entire week. Throughout Ontario County, strawberry picking occurred. In Albany County, the strawberry crop looked good.

**Week ending July 1st:** The week began cool and dry with high pressure in control. However, the high moved off the Mid-Atlantic coast by Tuesday and a return southerly flow brought very warm and humid conditions to New York. Temperatures soared into the upper 80's and 90's on Tuesday and Wednesday. A cold front approached from the Great Lakes region on Wednesday spawning strong to severe thunderstorms across central and eastern New York. The front cleared eastern New York and Long Island on Thursday. A broad upper level low over eastern Quebec funneled chilly air in the wake of the front across New York for Friday and Saturday. Humidity levels were much lower these days with temperatures below normal for late June. Overall, precipitation for the week was below normal, except for locations hit by the thunderstorms. Some of these locations ended up near normal or slightly above normal for the week. For example, Binghamton had an inch of rainfall, and LaGuardia had close to an inch. Despite the cool start and ending to the week, temperatures still finished well above normal for the state.

**Week ending July 8th:** We started off the month of July rather quiet and cooler than normal as high pressure was in place across the Great Lakes region. This high pressure system moved across the Middle-Atlantic states through the early part of the week with below normal temperatures and no rainfall. That changed on July 4<sup>th</sup> as a warm front from the Ohio River Valley lifted north providing a rather soggy holiday with rainfall amounts averaging from a half inch up to one and half inch with some thunderstorms moving across the area. Then its associated cold front moved across the region on Thursday with additional showers and thunderstorms. By Friday, high pressure moved into the region with drier and more seasonable temperatures. For the week ending July 7<sup>th</sup>, temperatures averaged near to slightly below normal with precipitation amounts near to slightly below normal, especially in areas where no thunderstorms occurred. In Onondaga County, strawberry harvest was virtually over. Raspberry harvest was in full swing. The blueberry crop continued to look good. In Albany County, strawberry harvest came to an end, and growers reported a good harvest.

**Week ending July 15th:** The week started out warm and humid with active weather over upstate New York with a stalled frontal boundary over northern New York and central New England. A series of disturbances generated periods of strong to severe thunderstorms over upstate New York. Some of the thunderstorms produced daily rainfall amounts in excess of two inches. Tuesday was the hottest day of the week, as high pressure built in from the Mid-Atlantic region briefly. A cold front accompanied by more showers and thunderstorms swept through the region Wednesday afternoon with cooler weather to close the week. A broad upper level low over central and eastern Canada ushered a cold front to move through the region on Friday with some scattered showers. Rainfall for the week was at normal to above normal amounts. The heaviest weekly totals occurred from torrential rainfall from thunderstorms. Temperatures for the week were above normal by 3 to 5 degrees. In the Lake Ontario fruit region, raspberries were ripening.

**WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, June 17<sup>th</sup>, 2007**

	Temperature			Growing Degree Days (Base 50)			Precipitation (inches)				
	High	Low	Avg	DFN <sup>1</sup>	Week	YTD <sup>2</sup>	DFN	Week	DFN	YTD	DFN
	<b>Hudson Valley</b>										
Albany	84	51	68	2	129	712	173	0.18	-0.69	11.31	2.83
Glens Falls	88	46	66	2	113	560	115	0.03	-0.74	9.13	0.67
Poughkeepsie	85	52	67	-1	118	778	189	1.77	0.87	13.14	3.11
<b>Mohawk Valley</b>											
Utica	82	45	65	5	109	442	118	0.10	-1.02	8.51	-3.19
<b>Champlain Valley</b>											
Plattsburgh	83	46	66	2	112	517	62	0.33	-0.44	8.59	1.15
<b>St. Lawrence Valley</b>											
Canton	85	48	68	5	124	540	151	0.12	-0.65	6.92	-0.76
Massena	86	49	69	6	135	551	128	0.00	-0.75	7.09	0.18
<b>Great Lakes</b>											
Buffalo	88	52	70	6	145	684	181	0.00	-0.84	5.03	-3.02
Colden	84	45	65	3	106	487	101	0.01	-0.97	5.82	-3.91
Niagara Falls	88	51	70	5	140	645	124	0.00	-0.84	4.97	-3.10
Rochester	89	52	70	7	144	732	220	0.00	-0.70	4.66	-2.37
Watertown	89	48	67	5	121	511	125	0.00	-0.65	4.32	-2.50
<b>Central Lakes</b>											
Dansville	84	47	66	2	115	604	103	0.09	-0.82	4.93	-2.95
Geneva	85	49	68	3	127	595	114	0.00	-0.91	6.12	-1.89
Honeoye	84	45	66	1	115	595	98	0.00	-0.91	8.02	0.11
Ithaca	85	46	66	3	111	545	116	0.06	-0.85	5.38	-2.97
Penn Yan	86	52	69	5	136	697	216	0.00	-0.91	5.86	-2.15
Syracuse	87	53	69	5	134	665	146	0.04	-0.87	7.16	-1.55
Warsaw	84	51	65	4	106	483	132	0.05	-1.00	8.38	-0.95
<b>Western Plateau</b>											
Alfred	84	40	64	3	98	443	99	0.00	-1.12	6.42	-1.93
Elmira	85	42	66	2	111	595	134	0.04	-0.87	5.18	-2.83
Franklinville	83	40	62	2	88	442	143	0.00	-1.04	6.94	-2.30
Sinclairville	85	43	64	3	102	525	169	0.00	-1.11	8.51	-1.84
<b>Eastern Plateau</b>											
Binghamton	85	51	67	4	123	631	187	0.00	-0.84	6.55	-1.98
Cobleskill	83	46	65	2	104	531	126	0.22	-0.76	13.66	4.34
Morrisville	82	49	65	4	108	498	119	1.75	0.77	9.52	0.39
Norwich	88	47	66	4	115	511	105	0.12	-0.86	9.41	-0.05
Oneonta	90	50	68	6	126	622	255	0.12	-0.86	12.84	2.67
<b>Coastal</b>											
Bridgehampton	82	54	65	0	109	603	142	0.07	-0.77	12.52	2.64
New York	85	58	70	-1	144	1038	255	0.24	-0.59	17.06	7.44

1. Departure from Normal

2. Year to Date: Season accumulations are for April 1st to date

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**WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, June 24<sup>th</sup>, 2007**

	Temperature			Growing Degree Days (Base 50)			Precipitation (inches)				
	High	Low	Avg	DFN <sup>1</sup>	Week	YTD <sup>2</sup>	DFN	Week	DFN	YTD	DFN
	<b>Hudson Valley</b>										
Albany	89	48	68	-1	125	837	169	0.85	0.01	12.16	2.84
Glens Falls	88	37	63	-4	94	654	96	0.57	-0.13	9.70	0.54
Poughkeepsie	89	44	68	0	128	906	187	0.31	-0.53	13.45	2.58
<b>Mohawk Valley</b>											
Utica	85	41	60	-3	72	514	102	2.07	1.01	10.58	-2.18
<b>Champlain Valley</b>											
Plattsburgh	88	41	63	-5	93	610	38	1.04	0.33	9.63	1.48
<b>St. Lawrence Valley</b>											
Canton	88	41	62	-4	82	622	131	0.46	-0.31	7.38	-1.07
Massena	89	46	64	-2	101	652	121	0.24	-0.53	7.33	-0.35
<b>Great Lakes</b>											
Buffalo	89	50	70	3	139	823	198	0.28	-0.56	5.31	-3.58
Colden	86	40	63	-2	93	580	95	1.18	0.20	7.00	-3.71
Niagara Falls	88	48	69	3	137	782	140	0.69	-0.10	5.66	-3.20
Rochester	89	46	68	3	129	861	234	1.24	0.54	5.90	-1.83
Watertown	91	39	63	-2	95	606	121	0.41	-0.20	4.73	-2.70
<b>Central Lakes</b>											
Dansville	90	43	65	-2	110	716	97	0.92	0.01	5.85	-2.94
Geneva	88	48	67	0	118	713	116	1.03	0.16	7.15	-1.73
Honeoye	87	40	64	-4	101	696	77	0.50	-0.38	8.52	-0.27
Ithaca	91	41	64	-2	100	645	109	1.54	0.63	6.92	-2.34
Penn Yan	91	51	68	2	128	825	228	0.83	-0.04	6.69	-2.19
Syracuse	91	47	67	1	120	785	150	1.47	0.56	8.63	-0.99
Warsaw	87	44	63	-1	93	576	132	0.86	-0.13	9.24	-1.08
<b>Western Plateau</b>											
Alfred	86	36	62	-2	84	524	91	1.13	0.01	7.55	-1.92
Elmira	93	44	66	1	115	710	137	1.06	0.15	6.24	-2.68
Franklinville	87	37	62	0	84	526	143	0.70	-0.30	7.64	-2.60
Sinclairville	87	41	63	-1	92	617	167	1.63	0.56	10.14	-1.28
<b>Eastern Plateau</b>											
Binghamton	90	47	65	0	109	740	187	1.68	0.84	8.23	-1.14
Cobleskill	88	43	63	-2	91	622	115	0.66	-0.32	14.32	4.02
Morrisville	85	43	62	-2	88	586	112	0.11	-0.85	9.63	-0.46
Norwich	91	42	64	-1	99	610	103	0.86	-0.09	10.27	-0.14
Oneonta	96	43	67	4	120	742	281	0.96	-0.02	13.80	2.65
<b>Coastal</b>											
Bridgehampton	84	48	67	1	122	725	144	0.13	-0.71	12.65	1.93
New York	90	61	75	3	174	1212	271	0.44	-0.40	17.50	7.04

1. Departure from Normal

2. Year to Date: Season accumulations are for April 1st to date

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**WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, July 1<sup>st</sup>, 2007**

	Temperature			Growing Degree Days (Base 50)			Precipitation (inches)				
	High	Low	Avg	DFN <sup>1</sup>	Week	YTD <sup>2</sup>	DFN	Week	DFN	YTD	DFN
	<b>Hudson Valley</b>										
Albany	94	52	73	4	164	1001	194	0.67	-0.14	12.83	2.70
Glens Falls	92	44	70	3	140	794	113	0.14	-0.56	9.84	-0.02
Poughkeepsie	95	52	74	5	170	1076	217	0.29	-0.59	13.74	1.99
<b>Mohawk Valley</b>											
Utica	86	44	66	2	111	625	115	0.35	-0.66	10.93	-2.84
<b>Champlain Valley</b>											
Plattsburgh	90	47	68	0	128	738	38	0.21	-0.49	9.84	0.99
<b>St. Lawrence Valley</b>											
Canton	90	43	67	2	123	745	142	0.21	-0.56	7.59	-1.63
Massena	92	44	69	3	135	787	139	0.56	-0.19	7.89	-0.54
<b>Great Lakes</b>											
Buffalo	91	53	73	5	160	983	225	0.32	-0.46	5.63	-4.04
Colden	87	46	68	4	128	708	115	0.04	-0.89	7.04	-4.60
Niagara Falls	92	52	73	5	160	942	169	0.00	-0.73	5.66	-3.93
Rochester	93	50	73	6	167	1028	276	0.06	-0.63	5.96	-2.46
Watertown	91	45	69	3	133	739	143	0.10	-0.43	4.83	-3.13
<b>Central Lakes</b>											
Dansville	94	48	71	3	148	864	117	0.14	-0.72	5.99	-3.66
Geneva	92	50	72	4	157	870	145	0.07	-0.74	7.22	-2.47
Honeoye	91	44	69	1	136	832	81	0.26	-0.54	8.78	-0.81
Ithaca	91	45	70	4	141	786	134	0.36	-0.49	7.28	-2.83
Penn Yan	93	51	73	6	166	991	266	0.40	-0.41	7.09	-2.60
Syracuse	92	51	72	5	155	940	179	0.26	-0.65	8.89	-1.64
Warsaw	87	49	70	6	140	716	170	0.10	-0.84	9.34	-1.92
<b>Western Plateau</b>											
Alfred	89	41	66	2	113	637	104	0.40	-0.66	7.95	-2.58
Elmira	94	42	70	3	141	851	155	0.14	-0.71	6.38	-3.39
Franklinville	89	41	67	4	119	645	168	0.11	-0.84	7.75	-3.44
Sinclairville	89	45	68	4	127	744	191	0.15	-0.88	10.29	-2.16
<b>Eastern Plateau</b>											
Binghamton	90	50	71	5	146	886	214	1.00	0.16	9.23	-0.98
Cobleskill	90	46	69	4	134	756	137	0.00	-0.95	14.32	3.07
Morrisville	86	47	68	3	127	713	132	0.13	-0.78	9.76	-1.24
Norwich	91	41	67	3	123	732	115	0.40	-0.51	10.67	-0.65
Oneonta	98	44	71	7	149	891	327	0.17	-0.80	13.97	1.85
<b>Coastal</b>											
Bridgehampton	86	55	72	4	154	879	166	0.16	-0.61	12.81	1.32
New York	95	64	80	6	209	1421	310	0.97	0.12	18.47	7.16

1. Departure from Normal

2. Year to Date: Season accumulations are for April 1st to date

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**WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, July 8<sup>th</sup>, 2007**

	Temperature			Growing Degree Days (Base 50)			Precipitation (inches)				
	High	Low	Avg	DFN <sup>1</sup>	Week	YTD <sup>2</sup>	DFN	Week	DFN	YTD	DFN
	<b>Hudson Valley</b>										
Albany	82	50	68	-4	126	1127	172	0.51	-0.24	13.34	2.46
Glens Falls	81	42	64	-6	98	892	77	0.80	0.16	10.64	0.14
Poughkeepsie	86	47	68	-4	129	1205	198	1.87	0.96	15.61	2.95
<b>Mohawk Valley</b>											
Utica	77	42	61	-5	79	704	88	0.43	-0.50	11.36	-3.34
<b>Champlain Valley</b>											
Plattsburgh	76	45	62	-8	87	825	-11	1.45	0.80	11.29	1.79
<b>St. Lawrence</b>											
Canton	78	47	64	-4	99	846	122	1.64	0.90	9.51	-0.45
Massena	80	51	65	-4	107	894	118	0.98	0.28	8.87	-0.26
<b>Great Lakes</b>											
Buffalo	81	51	67	-4	121	1104	204	0.91	0.21	6.54	-3.83
Colden	79	42	62	-6	85	793	83	1.41	0.55	8.45	-4.05
Niagara Falls	83	49	67	-4	119	1061	147	0.49	-0.16	6.15	-4.09
Rochester	86	50	67	-3	123	1151	264	0.31	-0.32	6.27	-2.78
Watertown	77	40	64	-4	101	840	121	0.43	-0.01	5.26	-3.14
<b>Central Lakes</b>											
Dansville	81	44	64	-7	97	961	78	1.00	0.24	6.99	-3.42
Geneva	84	49	66	-4	117	987	126	0.31	-0.42	7.53	-2.89
Honeoye	82	43	63	-8	93	925	32	1.13	0.43	9.91	-0.38
Ithaca	81	43	63	-5	97	883	107	1.34	0.53	8.62	-2.30
Penn Yan	82	50	66	-4	116	1107	246	0.77	0.04	7.86	-2.56
Syracuse	84	50	68	-3	125	1065	168	0.08	-0.83	8.97	-2.47
Warsaw	77	45	62	-5	85	801	145	1.77	0.93	11.11	-0.99
<b>Western Plateau</b>											
Alfred	79	36	59	-7	65	700	60	0.94	0.00	8.89	-2.58
Elmira	84	39	65	-5	103	954	126	1.00	0.17	7.38	-3.22
Franklinville	81	36	61	-4	76	721	143	0.68	-0.20	8.43	-3.64
Sinclairville	82	41	63	-4	92	836	172	0.14	-0.81	10.43	-2.97
<b>Eastern Plateau</b>											
Binghamton	79	48	65	-4	106	992	192	0.80	-0.04	10.03	-1.02
Cobleskill	80	47	64	-4	101	857	118	0.82	-0.03	15.14	3.04
Morrisville	78	43	63	-4	90	803	108	0.44	-0.41	10.20	-1.65
Norwich	82	42	63	-5	94	826	89	0.70	-0.14	11.37	-0.79
Oneonta	86	44	66	1	114	1005	328	0.44	-0.47	14.41	1.38
Coastal											
Bridgehamton	85	53	69	-2	135	1014	159	1.75	1.05	14.56	2.37
New York	88	60	75	-2	174	1595	306	1.20	0.29	19.67	7.45

1. Departure from Normal

2. Year to Date: Season accumulations are for April 1st to date

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**WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, July 15<sup>th</sup>, 2007**

	Temperature			Growing Degree Days (Base 50)			Precipitation (inches)				
	High	Low	Avg	DFN <sup>1</sup>	Week	YTD <sup>2</sup>	DFN	Week	DFN	YTD	DFN
	<b>Hudson Valley</b>										
Albany	93	55	74	3	172	1299	199	2.55	1.85	15.89	4.31
Glens Falls	90	44	69	-1	134	1026	129	0.85	0.22	11.49	0.36
Poughkeepsie	95	57	77	5	188	1393	209	0.72	-0.19	16.33	2.76
<b>Mohawk Valley</b>											
Utica	85	48	66	0	114	818	49	1.81	0.91	13.17	-2.43
<b>Champlain Valley</b>											
Plattsburgh	85	53	68	-4	126	951	138	3.37	2.74	14.66	4.53
<b>St. Lawrence Valley</b>											
Canton	87	54	69	2	136	982	90	3.01	2.29	12.52	1.84
Massena	84	50	68	-2	129	1023	110	2.37	1.67	11.24	1.41
<b>Great Lakes</b>											
Buffalo	90	53	72	2	159	1263	178	0.23	-0.41	6.77	-4.24
Colden	87	47	69	2	133	926	85	0.90	0.10	9.35	-3.95
Niagara Falls	92	50	72	2	153	1214	179	0.62	0.00	6.77	-4.09
Rochester	96	52	74	5	171	1322	155	0.59	0.02	6.86	-2.76
Watertown	92	50	71	3	148	988	97	1.12	0.72	6.38	-2.42
<b>Central Lakes</b>											
Dansville	94	49	71	1	147	1111	163	0.42	-0.28	7.29	-3.82
Geneva	95	54	74	4	165	1152	158	0.47	-0.20	8.00	-3.09
Honeoye	92	48	70	-2	141	1066	179	0.72	0.09	10.63	-0.29
Ithaca	92	48	71	3	147	1030	116	0.39	-0.38	9.01	-2.68
Penn Yan	94	54	74	4	168	1275	158	0.41	-0.26	8.27	-2.82
Syracuse	94	56	74	4	166	1231	164	1.59	0.72	10.56	-1.75
Warsaw	91	46	68	3	131	932	64	1.58	0.81	12.69	-0.18
<b>Western Plateau</b>											
Alfred	88	42	64	-3	99	799	60	0.66	-0.17	9.55	-2.75
Elmira	93	50	71	2	149	1103	140	0.91	0.14	8.29	-3.08
Franklinville	91	43	68	3	124	845	35	0.75	-0.08	9.18	-3.72
Sinclairville	90	46	68	2	125	959	63	1.22	0.31	11.65	-2.66
<b>Eastern Plateau</b>											
Binghamton	90	51	71	2	149	1141	117	0.18	-0.60	10.21	-1.62
Cobleskill	90	47	70	3	140	997	87	0.82	0.03	15.96	3.07
Morrisville	90	50	68	2	129	932	74	0.96	0.14	11.16	-1.51
Norwich	91	50	69	2	138	960	85	0.83	0.05	12.20	-0.74
Oneonta	98	52	75	9	173	1178	70	0.86	-0.05	15.27	1.33
<b>Coastal</b>											
Bridgehampton	85	57	74	3	166	1180	148	0.01	-0.67	14.57	1.70
New York	96	69	82	6	224	1819	382	0.87	-0.04	20.54	7.41

1. Departure from Normal

2. Year to Date: Season accumulations are for April 1st to date

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