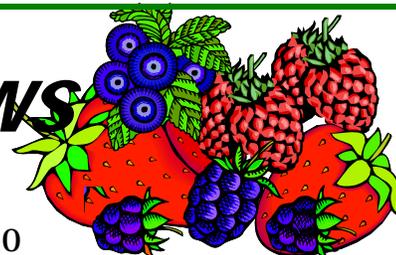




# New York Berry News

CORNELL UNIVERSITY



Volume 09, Number 5

May 19, 2010

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## CURRENT EVENTS

**June 17, 2010.** *NYSAES Strawberry Field Day*, Geneva, NY. See news brief that follows for details.

**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.

**July 29, 2010.** *2010 Cornell Fruit Field Day*, Geneva, NY. Save the date! Program details and registration information forthcoming.

**December 7-9, 2010.** *Great Lakes Fruit Vegetable and Farm Market EXPO*, DeVos Place Convention Center, Grand Rapids, Michigan. For more information: <http://www.glexpo.com>.

## Mother's Day 2010 Snow Storm A Photo Essay



## NEW CORNELL STRAWBERRY VARIETY TO BE UNVEILED AT FIELD DAY

Cornell University's New York State Agricultural Experiment Station will host a strawberry field day from 4 p.m. to 7 p.m. on Thursday, June 17, 2010 at the Darrow Farm outside Geneva. Dr. Courtney Weber, Cornell small fruits breeder and meeting host, will be unveiling the newest strawberry variety to be released from the Cornell University strawberry breeding program.



The new variety, which has been tested as NY99-21, is featured in a trial with leading regional varieties and advanced selections from the Cornell University strawberry breeding program. Fruit will be available for evaluation and tasting. Additionally, a comprehensive program on strawberry production and pest management will be presented by Drs. Courtney Weber, Marvin Pritts, Kerik Cox, and Greg Loeb and Extension Specialist Cathy Heidenreich.

The program is free and open to the public but pre-registration is strongly encouraged to ensure adequate handouts and refreshments. The Darrow Farm is located at 3227 Gates Rd., approximately 3 miles west of the Experiment Station off County Rd. 4 (North St. in Geneva) and 1 mile south on Gates Rd.

### Registration is by email, phone, or mail to:

Lou Ann Rago, Cornell University-NYSAES, Dept. of Horticultural Sciences  
630 W. North St. Geneva, NY 14456.  
email: [lar38@cornell.edu](mailto:lar38@cornell.edu) phone: (315) 787-2394

Questions may be directed to Dr. Courtney Weber at 315-787-2395 or [caw34@cornell.edu](mailto:caw34@cornell.edu).

## NEW VERSION OF CORNELL BERRY TOOL A "ONE STOP SHOP" FOR BERRY PEST MANAGEMENT

The [berry diagnostic tool](#), designed in 2001 by [Dr. Marvin Pritts](#) as a compliment to the [NRAES](#) berry production guides, has a brand new look. The 2010 version, extensively revised and expanded by Dr. Pritts and Extension Berry Specialist [Cathy Heidenreich](#), now provides a "one-stop-shop" for berry pest diagnosis and management information. There's more on biotic and abiotic diseases, more on insects and mites, more on wildlife damage.



Berry Crop CSI is now a snap for growers, consultants and extension personnel, who using the on line tool, work through a series of questions to reach potential diagnoses for the berry problem they may be encountering. Detailed descriptions and photos are included in all sections of the decision tool to help with decision-making. Once a final diagnosis is reached, the "More information" tab takes them to links to other descriptive on line information. On that same page they can also follow links directly to the "Cornell Pest Management Guidelines for Berry Crops" management information for that particular pest and/or plant development stage for that pest. Pest management links are also provided for organic growers and growers outside NYS.

For those who are new to Berry Crop CSI, there is a section on [visual assessment of berry crop health](#). Also available is a section on [how to use the berry diagnostic tool](#) for new users.

Visit the Berry Diagnostic Tool here: <http://www.fruit.cornell.edu/berrytool/>.

## News from the NYS Berry Growers Association



### HELP US CHOOSE OUR NEW LOGO!

*Dale Ila M. Riggs, Chair, NYS Berry Growers' Association  
The Berry Patch, Stephentown NY*

As many of you know, the NYS Berry Growers Association received a grant from the Farm Credit Ag Enhancement Grants Program to hire a graphic designer to design a new logo for us that we can use in marketing and promotion efforts. The Board looked at designs from three graphic designers, chose which designer to retain, received initial designs, asked for modifications, and we are now trying to make the final decision.

We need your help! As members of the Association, we would like your input on which logo we should choose. The logos are shown right. Number 1 is the one with the two tone "New York" in the cap of the strawberry. Number 2 has the banner with "New York" at the base of the strawberry, and Number 3 has the logo draped across the strawberry.

Study the logo options. If you have the ability, reduce them, enlarge them, and see what they look like in black and white. Then send your vote to Paul Baker, Executive Secretary for the NYSBGA ([goodberries@roadrunner.com](mailto:goodberries@roadrunner.com)) by June 1<sup>st</sup>. We'd like to start using the logo soon!  
Thanks for your help.



# PHASE II COMPLETE FOR CORNELL FRUIT WEBSITE

Another major upgrade to the Cornell Fruit website is complete. The Berry portal has been re-organized and updated with the new look. Improvements include a redesigned [homepage](#), featured resources on the right sidebar of most pages, and an updated 2010 [berry label alert page](#). Other additions include direct links to berry-related articles from the NY Fruit Quarterly.

The [Grape portal](#), like the recently completed [Tree Fruit portal](#), is undergoing a total overhaul and is slated for completion later this year.



Cornell Fruit website - designed to serve the information needs of commercial fruit growers in New York State - is a project of the Tree Fruit & Berry Program Work Team and the Viticulture & Enology Program Work Team. Visit the [About](#) page to learn more about the Program Work Teams and the website steering committee.

To check out the revised berry portal visit: <http://www.fruit.cornell.edu/berry>.

## PRODUCE SAFETY NEWS

Betsy Bihn, GAPs Program Coordinator, Cornell University, Department of Food Science, Ithaca, NY 14853

### Open Docket for FDA Produce Safety Rule.

This is very important and requires action before **May 24, 2010**. "The Food and Drug Administration is proposing to promulgate regulations setting enforceable standards for fresh produce safety at the farm and packing house (7 December 2009 *Unified Agenda & Regulatory Plan*)." Essentially, this means that the FDA plans to release a regulation with enforceable standards for fresh produce. There are several additional points that I want to highlight from a recent presentation given by Jim Gorny (FDA).



- FDA recognizes that the produce sector consists not only of large national operators but also many small producers, including many who market directly to consumers at roadside stands and farmers markets;
- FDA will carefully consider the public health and economic impacts of applying requirements to very small producers, and will consider appropriate adjustments in the regulations.
- To ensure standards are developed that stakeholders can and will support, FDA must rely on significant input from all stakeholders – particularly those with first-hand, on-the-ground experience.

The first two points highlight the fact that all producers are considered important to this regulation, so all fresh produce growers should be aware of this impending rule. The last bullet highlights the significance of this extension article. In a somewhat unusual move, the FDA has opened a docket for comment BEFORE the release of the rule. The reason for this is that they are hoping to gain insight and comments from fresh produce growers so that they do not create a rule that is unworkable. I encourage all of you to go to the website listed below and share your thoughts about food safety. The most useful comments will be those that offer specific suggestions about practices that you think are important and effective as well as those you think will cripple your production. Although you may be inclined to simply say that you do not want a produce safety rule that will not have as big an impact as if you share specific points. For instance, sharing practices you currently do would be very helpful or if you think some practices are unachievable at the farm, stating the specifics of those practices would provide them with a guide. The docket will be open until **May 24, 2010**. At the website below you can submit comments and view comments submitted by others. I have been told you can submit comments anonymously if you have concerns about your privacy. Please do comment. Now is the time to participate and have a voice in the development of this rule.

#### “Preventive Controls for Fresh Produce: Request for Comments”

- Proposed rule, reflecting all comments, expected before the end of 2010.
- Go to [www.regulations.gov](http://www.regulations.gov)
- Enter the docket number in the “Keyword” field: FDA-2010-N-0085
- This takes you to the docket, *Preventive Controls for Fresh Produce: Request for Comments*
- You can type comments directly in the field and/or attach documents in support of your comments.
- Press submit

### *Next Gaps Online Produce Safety Course*

I know many of you are already busy in the field but many people have contacted me about the online course, so we are offering another section in June. The next English GAPs Online Produce Safety Course will begin June 2 and will run through June 23, 2010. Registration is now open. Each course is limited to 25 people. There is a \$50 fee for taking this course.

To register, follow this link to the registration page at <http://www.ecornell.com/gapswww.ecornell.com/gaps>, check the **Add to Cart** checkbox and **click the Add to Cart Button**.

Please forward this email to anyone who may be interested. If you have any questions about the course, go to <http://www.gaps.cornell.edu> or contact me at [eab38@cornell.edu](mailto:eab38@cornell.edu) or at 315 787 2625.

The next section dates will be posted at [www.gaps.cornell.edu](http://www.gaps.cornell.edu) under Events Calendar.

Any questions about either of these topics please let me know. Betsy Bihn

## **MAY BERRY BAROMETER** *HELPING TO KEEP YOU UP TO THE MARK!*

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



**F**rost is still the critical issue facing us this spring. We are continuing to run 100 to 200 growing degree days (GDD Base 50) above normal across the state (see weather reports at the end of this newsletter). The early spring heat pushed things ahead growth wise almost 3 weeks compared to other years.

**REMINDER:** Growers with NAP insurance should call in/report even *possible* cold/frost damage losses to FSA within 7 – 10 days of occurrence to qualify.

**NOTE:** Frost injury on blossoms and frequent rains are a set up for Botrytis fruit rot (gray mold) in strawberries. Growers should be taking every precaution to protect open blossoms and fruit from infection. Angular leaf spot outbreaks are also a possibility with extensive use of overhead irrigation.

### **ALL BERRY CROPS:**

1. **Fertilization** – Now is the time for the first of 2 split applications on blueberries, raspberries and ribes. See article that follows by Laura McDermott for more.
2. **Weed management** – Record efficacy of any pre-emergent applications. Scout for newly emerging weeds.
3. **Pest management**
  - a. Review last year’s pest management notes to know what pests you may expect and when to watch for them. Set up monitoring systems as needed: sticky cards, traps, etc.
  - b. Scout! Record pest frequency and locations.
  - c. If you see problems developing, check out the newly revised and expanded [berry diagnostic tool](#) for help in identifying the culprits:

- d. See [Cornell Pest Management Guidelines for Berry Crops](#) for management options for various pests.

## **STRAWBERRIES:**

### *Established plantings:*

1. **Frost protection** – We are still very much at risk from now through the end of the month. Another article by Laura McDermott follows for a quick review of what to do.
2. **Weed management** – Poast or Select for perennial grasses; Stinger for dandelions and thistles; Prowl H2O for banded applications between rows. Hooded or shielded applications of Gramoxone Inteon or Chateau to row middles; do not apply after fruit set. Follow any special instructions when making applications (gal/acre, psi, shielded application only, etc.). Remember to include any adjuvant(s) listed on the label.
3. **Disease management**
  - a. *Leaf spot diseases* – Early season applications are recommended when carry-over inoculum from the previous year is high and conditions are favorable for disease development.
  - b. *Gray mold* (Botrytis) - Protection of blossoms is critical in gray mold management. While excellent gray mold protection is generally obtained with 2 fungicide sprays at early bloom (10-20%) and 10 days later, early season frost and continued rains may make continued fruit protection prior to harvest highly desirable. See article by Dr. Kerik Cox that follows for more.
  - c. *Leather rot* – Dr. David Handley of Maine points out in his University of Maine Strawberry IPM Newsletter (No. 2, May 14, 2010) that Leather rot (*Phytophthora cactorum*) could become an issue with a lot of water standing in the fields from frost protection. Foliar sprays of Aliette, Agri-Phos or Phostrol (similar to Aliette) should provide control. He recommends a spray during bloom and fruit development.
  - d. *Anthracnose* – This disease may occur on both green and ripe fruit, but is most common on ripe fruit following periods of warm, wet weather. Monitor fields for the presence of anthracnose, particularly if favorable weather conditions exist. **Note:** Fungicides will not stop an infection once it has begun. If fields with a previous history of the disease a protective fungicide schedule is recommended.
4. **Arthropod pest management** (insects and mites)
  - a. *Bud weevil (clipper)* – Reports from Ontario berry colleagues indicated they are seeing a lot of clipper damage this season in both strawberries, and more so in raspberries. Be on the look out. Adults puncture blossom buds while feeding and deposit eggs in the nearly mature buds. Buds are then girdled so they hang by a mere thread or fall to the ground. Injury is most likely along field edges or when fields border woodlots or other suitable sites for adult overwintering. Suggestion action threshold is more than one primary or secondary flower bud or more than 2 tertiary flower buds clipped per truss, or more than one injured truss per foot or row. (*adult, top right*)
  - b. *Tarnished plant bug* – Reports are mixed on TPB activity. Cooler weather may have slowed development slightly. Scout for these any time from just before blossoms open to harvest. Strike flower clusters over a white paper plate. Suggested action threshold is 0.5 nymphs per cluster or 4 out of 15 clusters with 1 or more nymphs. (*nymph, center right*)
  - c. *Spittle bug* - This insect also appears around bloom, leaving frothy white masses on stems and leaves. These masses harbor nymphs which pierce stems and suck plant juices. Extensive feeding may lead to plant stunting and reduced berry size. Damaged leaves appear crinkled and darker green than healthy leaves. Spittle masses are a great nuisance to pickers. Suggestion action threshold is one spittle mass per sq. ft. of row. (*spittle mass, lower right*)



### *New plantings:*

1. **Plant establishment**
  - a. Runners need good soil contact to root. Keep the 18" planting strip weed free by hand weeding or using cultivation equipment for good runner establishment. Direct runner plants from aisles back into

- planting row area. Remove blossoms as they open to encourage good plant establishment and growth.
- b. Remove flower clusters and blooms as they emerge to promote good plant establishment.

## 2. Disease management

- a. Monitor new plantings for leaf spot, especially if overhead irrigation is in use. If disease is detected protectant sprays should be considered if conditions are favorable for subsequent disease development.

## **BLUEBERRIES:**

### *Established plantings:*

1. **Frost protection** – We are still at risk now through the end of the month. Some damage has already been reported on green fruit. Forst damaged berries are reported to be “squishy” and brown when cut in half.
2. **Weed management** –Gramoxone Inteon or Scythe before new cane emergence. Follow any special instructions when making applications (gal/acre, psi, shielded application only, etc.). Remember to include any adjuvant(s) listed on the label. Hand-weed in row, mow row middles and borders.
3. **Disease management**
  - a. *Mummyberry* – Plantings with a history of this disease should already be implementing a protective spray program for blossoms. Plantings without previous history of disease should be monitored for signs of primary infection (shoot blight phase). Infected leaves and shoots wilt, turn violet brown, and die. Grayish masses of spores may be evident along midribs of blighted leaves. If shoot blight is detected in your planting, protection of blossoms is essential. *(top right)*
  - b. *Blossom blights* – Recent wet weather, combined with frost events, may trigger outbreaks of blossom blight. These may have several causes. If you have a history of this disease you may want to consider protectant sprays when rainy, foggy weather prevails during prebloom and bloom. *(right)* See articles by Annemiek Schilder and fact sheet by Bill Sciarappa and Peter Oudemans that follow for more on these diseases.
4. **Arthropod pest management** (insects and mites)
  - a. *Cranberry and cherry fruitworms* – Numerous reports of problems with these pests were received last season. Adult moths appear during late May to early June. Use pheromone traps to monitor adult flight activity and aid in timing of applications. For more information on fruitworms see: <http://www.fruit.cornell.edu/Berries/bbpdf/bbfruitworm.pdf>.



### *New plantings:*

1. **Plant establishment**
  - a. Gently rub off emerging flower buds between the palms of the hands to promote good plant growth and establishment.
  - b. **Irrigate!**
2. **Weed management**
  - a. Devrinol may be applied for weed management before seedling weeds emerge. Till or water in within 24 hours. Hand weeding and mulch within row for weed management.

## **RASPBERRIES AND BLACKBERRIES:**

### *Established plantings:*

1. **Weed management** – Aim, Gramoxone Inteon or Scythe before new cane emergence. Can suppress primocanes. Hand-weed in row, mow row middles and borders.
2. **Arthropod pest management** (insects and mites)
  - a. *Raspberry fruit worm* – Watch for raspberry fruit worm adults (small light brown beetles) in early May when they begin feeding on young leaves and buds. Adults skeletonize leaves and hinder fruit development. Small larvae feed inside flower buds and then bore into young fruit, causing them to dry up or decay and fall off. These pests are especially a problem in weedy fields. Protectant applications should be made as soon as damage is detected in early spring (just before blossoms open).

- b. *Raspberry sawfly* – Sawfly larvae are ¼” pale green worms that feed on the outer edges of leaves, chewing out irregular holes and sometimes skeletonizing leaves. These insects are also active in early May; products are often effective against both insects; see labels for details.

*New plantings:*

1. **Plant establishment**
  - a. **Irrigate!**
2. **Weed management** – Apply Devrinol after planting before seedling weeds emerge. Till or water in within 24 hours. Follow any special instructions when making applications (gal/acre, psi, shielded application only, etc.). Remember to include any adjuvant(s) listed on the label. Use mulch in-row for 1<sup>st</sup> year on lighter soils. . Hand weed in-row on heavier soils.

**CURRENTS AND GOOSEBERRIES:**

*Established plantings:*

1. **Pollination** – Wild bees and other insects are efficient pollinators but cannot always be depended upon due to fluctuating population numbers. Where bee activity is less than desired, honeybees can be moved in quickly and in large numbers. Hives should be set at about 25% bloom at a density of 1-2 hives per acre. Locate hives in the centers of fields. Mow weed and ground cover flowers before introducing bees.
2. **Weed management** – Gramoxone Inteon or Scythe before new cane emergence.
3. **Arthropod pest management** (insects and mites)
  - a. *Currant aphid* – This aphid is most commonly seen on red and white currant, and sometimes gooseberry. Infested leaves are cupped, galled, distorted and discolored. Honeydew secreted by aphids covers foliage and fruit with a sticky coating.
  - b. *Gooseberry fruit worm* – adults lay eggs in flowers of gooseberries, currants and Jostaberries. Larvae burrow into berries, weaving portions of stems together with silken webbing.
  - c. *Imported currant worm* – Worms of this pest feed first in colonies then singly, voraciously stripping plants of foliage. Up to 3 generations a season may occur if weather conditions are favorable. Sprays should be applied as soon as worms appear. Although these larvae resemble other lepidopteran worms they are not related and **cannot** be controlled with BT.

*New plantings:*

1. **Weed management** - Hand-weeding or spot applications to control weeds.

**NITROGEN FERTILIZATION FOR BERRY CROPS**

*Laura McDermott, Regional Agricultural Specialist, Capital District Vegetable and Small Fruit Program of Cornell, Cornell Cooperative Extension-Washington County, 415 Lower Main St., Hudson Falls, NY12839*

**T**he most important time for thinking about small fruit crops fertility is the year prior to planting. Soil pH phosphorus and potash plus some micronutrients can be added to the soil, if needed, in a pre-plant incorporation. Oftentimes, that may be the only time you need to address these nutrients during the life of the planting. Small adjustments can be made as the planting matures using foliar leaf sampling.

Berry crops still have nitrogen needs that must be met annually. For all berry crops except strawberries, add the N in a 3’ band in the row – for strawberries concentrate the N in a 1’ band over the row. The [following recommendations](#) are also listed in the [2010 Pest Management Guidelines for Berry Crops](#) along with information for less common berry crops like currants, elderberries and cranberries. All of the rate information is for pounds of actual N per acre. Thus you will need to know the % of actual N in the type of fertilizer that you are using. Also, if you need to convert lb/A to lbs/100 sq feet, then multiply the per acre rate by 0.0023 to get the rate in terms of 100 sq feet. (More of these handy conversions are also in the Guidelines).

<b>Fertilizer</b>	<b>% actual N in fertilizer</b>
Ammonium nitrate	34.0
Ammonium sulfate	20.5
Calcium nitrate	15.0
Diammonium phosphate	17.0
Potassium nitrate	13.0
Urea	46.0

**June-bearing strawberries:** Transplant year – use calcium nitrate or ammonium nitrate. Make sure that plants are growing well before applying fertilizer and then add 30#N/A in early June and again in early Sept. For bearing years - Do not fertilize bearing strawberries until renovation because adding N in the spring leads to poor berry quality

and contributes to fruit rot diseases. Add 70# N/A at renovation and then add 30#N/A again in early September (adjust this rate depending on foliar leaf analysis). You can use urea or calcium nitrate or ammonium nitrate as N sources for established berries.

**Raspberries:** For newly planted summer and fall raspberries, use calcium nitrate at the rate of 25#N/acre and apply 4 weeks after transplanting. If your actual area of 3' wide rows is 0.25 acre and calcium nitrate is 15% N, you will calculate the amount of fertilizer to apply by dividing the desired amount of actual N (25#) by the %N in the fertilizer (15) and then multiply by 100. For this case it will be 167 pounds per acre or ¼ of that for 42 pounds (yes, I do round up!). For bearing summer and fall raspberries, split an application of urea or ammonium nitrate between May and June, or apply it all in May. Rates will vary depending upon the age of the planting and the type of soil that you have. Please see the guidelines or call me for more specific information.

**Blueberries:** Do not fertilize newly planted blueberries. When fertilization is appropriate, after the transplant year, N applications should be split between May and June and only **non-nitrate** forms of N should be used, like ammonium sulfate or urea. Rates vary depending upon age with 1 year old plants only needing 15#N/A per year and 7 year old plants needing 65#N/A per year. Still blueberries are not heavy nitrogen feeders.

*(Reprinted with permission from: Capital District Vegetable and Small Fruit Program Weekly Update, Vol. 2 No. 3, May 12, 2010.)*

## PROTECTING STRAWBERRIES FROM FROST INJURY

*Laura McDermott, Regional Agricultural Specialist, Capital District Vegetable and Small Fruit Program of Cornell, Cornell Cooperative Extension-Washington County, 415 Lower Main St., Hudson Falls, NY 12839*

**O**ur early spring which is approximately 110 Growing Degree Days ahead of the average seasonal accumulation for this date, makes me very nervous. Strawberry blossoms are very vulnerable to frost and freeze temperatures (see Table 1) and frost protection is tough – on the plants AND on the farmer. Here are some of the options that are available:

Floating row covers are very useful for small acreages of berries or if irrigation is not available. The acreage size that is appropriate has been getting larger as more equipment and better sized cover materials become available. Also, if the soil is already waterlogged, row cover might be a better option for the berry grower. Row cover offers convenience in that you are not up all night monitoring the irrigation system. The degree of frost protection varies with the weight and fiber arrangement of the row cover. Usually heavier fabric covers are better at insulating; row covers weighing 0.6 ounces per square yard typically can give 2° or 3° F protection. Some growers have reported that two heavy layers can give up to 10 degrees of protection.

When row covers are used for frost protection, they should be pulled over the crop during mid-afternoon to allow heating to take place. Row covers can also be used in conjunction with sprinkler irrigation on top of the row cover. Row covers used in this way typically cut the amount of overhead irrigation needed for frost protection by about 50% on average. For more information on row covers, please see the chart on the next page, compiled by Victor Lilley, VP Reddick Fumigants, Inc.

Sprinkler irrigation works well, but because of the large volume of water needed, growers should delay using irrigation until more than 10% of blossoms are in danger. This doesn't necessarily mean the blossoms need to be open, if you refer to Table 1, note the blossom stage and the temperature at which frost damage occurs. Sprinkler irrigation provides protection from cold temperatures because water gives off heat when it changes from a liquid to a solid. This helps explain why it is so important to keep the water going until air temperatures are well above freezing. It's the change from water to ice that provides heat – NOT the coating of ice that is created.

**Table 1.** Critical temperatures (degrees F) for cold damage of flower buds based on stage of development.

Growth Stage	Critical temp. (F)
Bud emergence	10
Tight bud	22
"Popcorn"	26
Open blossom	30
Green fruit	28

*Sources: Strawberry Critical Temperatures - K. Perry and B.C. Poling, North Carolina State Univ.; and Richard Funt, Ohio State Univ.*

Some growers have reported that two heavy layers can give up to 10 degrees of protection.

Spunbonded Polypropylene		ROW COVER REFERENCE CHART (compiled by Victor Lilley, VP Reddick Fumigants, Inc.)				
MANUFACTURE TYPE	PRODUCT INFORMATION	WEIGHT OZ/SQ. YD.	STANDARD SIZE FT.	APPLICATIONS	EST. COST PER ACRE	COMMENTS
AgroFabric Pro 10 ( <i>light weight</i> )	-spunbonded polypropylene -uv stabilized -air & water permeable -non abrasive,-one crop -glued seams, -transmits 90% light	0.3	8ft. To 17ft. widths -custom sizes available	-insect protection -seed germination	\$400	-Not recommended for strawberry over-wintering or frost/freeze protection. -No heat buildup
AgroFabric Pro 17Gro-Guard GG20 & GG17 ( <i>light to medium wt.</i> )	-spunbonded polypropylene -uv stabilized, -air & water permeable -one to two crops, -glued seams -transmits 85% light	0.5 0.550.6	83in. To 50ft. widths -custom sizes available	-frost protection, 2-4°F -higher daytime temp 8-10° - earlier/increased yields -extended growing season -reduced desiccation & winter kill	\$500	-Not recommended for strawberry over-wintering because of durability, although it can be used for late season freeze protection in combination with overhead irrigation.
AgroFabric Pro 30Agribon+ AG-30Gro-Guard UV GG34 ( <i>medium weight</i> )	-spunbonded polypropylene -uv stabilized, -air & water permeable -high tear strength & edge tear resistance, double bonded glue seam, one to two crops, non abrasive -transmits 70% light, good microclimate	0.9 0.9	83in. To 50ft. widths -custom sizes available	-frost & freeze protection, 4-6° - over-wintering protection in moderate climates -higher daytime temp 10-15° -reduced desiccation & winter kill -improved yields & quality	\$800	-Recommended for over-wintering straw-berries in moderate climates - Mechanically applicable -This weight is most favorable for much of the Carolina's, Ga, Va and Tenn for over-wintering and late season frost/freeze
Typar T-518 ( <i>medium to heavy wt.</i> )	-spunbonded polypropylene -uv stabilized, -air & water permeable -high tear strength & edge tear resistance, - three to five crops -transmits 70% light	1.25	1.5ft. To 50ft. widths	-frost & freeze protection, 4-6° - over-wintering protection in moderate climates -reduced desiccation & winter kill	\$1,700	-Recommended for over-wintering straw-berries in moderate to cold climates -Good for late season frost/freeze protection and can be used with over-head irrigation for additional freeze protection.
AgroFabric Pro 50Agribon+ AG-50Gro-Guard GG51 ( <i>heavy weight</i> )	-spunbonded polypropylene -uv stabilized, -air & water permeable -high tear strength & edge tear resistance, double bonded glue seam, -two to four crops -transmits 50% light	1.5	83in. To 50ft. widths -custom sizes available	-freeze protection, 6-8°F -over-wintering protection in harsh cold climates -reduced desiccation & winter kill	\$1,200	-Not recommended for over-wintering in mild to moderate climates due to heat buildup and light reduction. -In most plasticulture strawberry crops this amount of light reduction would not be beneficial. -Could be used for late season freezes, but not recommended.
AgroFabric Pro 70Gro-Guard GG60 ( <i>extra heavy weight</i> )	-spunbonded polypropylene -uv stabilized, -air & water permeable -high tear strength, multiple seasons -transmits 30% light	2	12ft. To 25ft. widths	-freeze protection, 8° + F -used in harsh cold climates	\$1,500	-Not recommended for over-wintering plasticulture strawberries in mild to moderate climates due to heat buildup and light reduction. -Could be used for late season freezes, but not recommended.
Spunbonded Polyester						
Reemay 2006 ( <i>light to medium weight</i> )	-spunbonded polyester -uv stabilized, - air & water permeable -one to two crops -transmits 85% light	0.6	67in. To 12ft.4in widths	-2-4° F frost protection - earlier/increased yields -extended growing season -reduced desiccation & winter kill	\$1,200	-Not recommended for strawberry over-wintering because of durability but it can be used for late season frost & freeze protection when used with overhead irrigation.

The irrigation should be started when the temperature at plant level falls to 4°F above the critical temperature (for example, 34°F for open strawberry blossoms). If the dew point is below freezing, irrigation must be started at a higher temperature. Under conditions with wind or low humidity, damage can occur when the air temperature is several degrees above the freezing point because of evaporative cooling. Because of this, the wet bulb temperature is often a better indication of when the irrigation system should be used rather than a standard dry bulb thermometer. Make sure to place the thermometer at plant level in the field to reduce error.

**Monitoring Temperatures:** Stick with a dry bulb thermometer, not a dial thermometer. If you live more than a quick walk away from your fields, or if you value piece of mind and a little sleep, you should investigate some of the thermocouple systems with alarms. These systems are an investment and also require a bit of time to get familiar with. Some suppliers of monitoring systems include Spectrum Technologies: [http://www.specmeters.com/home\\_usa.html](http://www.specmeters.com/home_usa.html). Another website that I found that had tools that were much less expensive was at Tip Temp: <http://www.tiptemp.com/Default.aspx>. I do not have any experience with these gadgets, but some of them are described as devices that could be of great use to a grower.

*(Reprinted with permission from: Capital District Vegetable and Small Fruit Program Weekly Update, Vol. 2 No. 2, May 6, 2010.)*

## BLOOM TIME BLUES

*Kerik Cox, Assistant Professor, Department of Plant Pathology and Plant-Microbe Biology, Cornell University's NY State Agricultural Experiment Station, Geneva, NY 14456.*

Strawberries are coming into bloom and raspberries aren't far behind. Unfortunately, our bloom time weather is putting strawberries at risk for botrytis blossom blight and other foliar diseases like angular leaf spot. The spring of 2010 was initially characterized by unseasonably warm weather followed by several spring freezes, cold rain, and even snow. Such weather at bloom is particularly favorable for diseases like *Botrytis* blossom blight and angular leaf spot of strawberry. Even mild spring freezes can cause microscopic wounds in succulent young tissues allowing fungi and bacteria to establish a foothold in strawberry plantings.

*Botrytis* blossom blight, caused by the fungus *Botrytis cinerea*, is primarily driven by excessive moisture and free sugars, which are readily abundant in open flowers. As long as there is sufficient moisture, *Botrytis* can infect and colonize blossoms in fairly cold weather, which makes it potentially devastating for NY small fruit. In addition to favoring cool weather, *Botrytis* thrives in situations of overhead irrigation often used in small fruit production. Once infection has occurred, the fungus will colonize flower and fruit tissue, which becomes covered in fluffy tan to grey colored masses of mycelium and spores (*above*). Underneath, the flower or developing fruit will be shriveled and killed.



In the coming week, begin scouting for the signs of *Botrytis* blossom blight (Fig.1) in your plantings. If discovered, consider protecting your crop with a fungicide that has activity against *Botrytis*. Applying a fungicide now will protect your crop from blossom infections during this period of cold wet weather, and help keep the level of *Botrytis* inoculum down when fruit comes into maturity. Applying fungicides such as Pristine WG, Elevate, Switch, and Scala will provide excellent protection against *Botrytis* blossom blight. In addition, all of these materials may have some post infection activity against *Botrytis*. However, it is best to apply fungicides prior to infection for maximum efficacy unless there is no alternative.

Another disease of concern during this cold wet weather is angular leaf spot of strawberry. This disease is not caused by a fungus, but by a bacterium *Xanthomonas fragariae* instead. This bacterium causes small water soaked lesions on the undersides of the leaves (*below left*). Young lesions are delineated by the veins, which give them an angular appearance. As the infection progresses, lesions coalesce and become necrotic. On the upper surface of the leaves, lesions are reddish brown and indistinct (*below right*) not unlike that of other foliar strawberry diseases. However, only lesions caused by angular leaf spot will be translucent on the undersides of leaves. If infections are severe, plants

may undergo premature defoliation, which compromises vigor and productivity. In addition to leaf lesions, the bacterium can cause blackened stem cap lesions, which make the fruit look unappealing to consumers.



Angular leaf spot is best managed by avoiding highly susceptible cultivars and having wide within and between row spacing to promote drying of foliage. It is almost important to remove dead or spent plant material at the seasons end to eliminate overwintering bacterial inoculum for the spring. Unfortunately, there are no antibiotics labeled for strawberry, but applications of copper bactericides such as Badge, Cuprofix and Kocide can protect against angular leaf spot infection. If you have a tightly packed strawberry planting, you should consider scouting for the symptoms of angular leaf spot. If you see signs of angular leaf spot, you may wish to consider a program of copper



applications to minimize impacts of the disease. It is important to note that copper can be phytotoxic to young tissues especially in cold wet weather that prevents drying. Such phytotoxicity may also manifest itself as purplish lesions on the surface of leaves. In contrast to angular leaf spot, these lesions will not be water soaked or translucent on the undersides of leaves, and will be uniformly present over the surface of the leaves in a pattern consistent with the sprayer. Also, consider using adding lime to copper applications. Lime acts as a safening agent and minimizes the potential for phytotoxicity.

The 2010 spring weather has been favorable for several bloom time diseases of strawberry. Action taken now will reduce disease pressure during fruit maturation. Also, raspberry bloom is just around the corner, and although brambles won't get angular leaf spot, *Botrytis* blossom blight is a real possibility. Take the same precautions as those mentioned for strawberries two prevent *Botrytis* blossom blight in your raspberries.

## BLOSSOM AND TWIG BLIGHT IN BLUEBERRIES

*Annemiek Schilder, Department of Plant Pathology, Michigan State University*

**C**old, rainy conditions with freezes during bloom are conducive to the development of blossom and twig blight in blueberries. Frost can cause microscopic wounds on plant tissues that allow invasion by fungi and bacteria. Extended duration of wetness of plant surfaces enhances fungal and bacterial growth and infection. In Michigan, at least five different pathogens can cause blossom blight: *Phomopsis vaccinii* (Phomopsis twig blight), *Botrytis cinerea* (Botrytis blossom blight), *Colletotrichum acutatum* (anthracnose blossom/twig blight), *Monilinia vaccinii-corymbosi* (mummy berry flower strikes), and *Pseudomonas syringae* (bacterial twig blight). In addition, blueberry scorch virus and blueberry shock virus can cause blossom blight that can resemble Phomopsis twig blight. Just by looking at a blighted blossom or twigs it is difficult to identify the causal agent unless fungal growth is present, so it is a good idea to inspect the blighted tissues with a hand lens or magnifying glass.

Botrytis blossom blight, caused by *Botrytis cinerea*, is characterized by fluffy, gray to tan spores that are present all over the surface of killed blossoms. In the case of mummy berry flower strikes, a dense layer of gray powdery spores will be restricted to the flower stem or cluster stem. In general, flower strikes are much less common than shoot strikes, so it is unlikely to see flower strikes without shoot strikes. Anthracnose blossom and twig blight does not have very diagnostic features to distinguish it from Phomopsis twig blight. Pseudomonas blight is characterized by dark brown to black necrosis on the twigs. Incubation in the laboratory is necessary to identify the causal agents. Samples can be sent for diagnosis to the MSU diagnostic lab (<http://www.pestid.msu.edu/>; phone 517-355-4536. **Editor's note:** To submit samples in NY for disease diagnosis, contact Plant Disease Clinic, Cornell University, Department of Plant Pathology, 334 Plant Science Building, Ithaca, NY 14853-4203, (607) 255-7850, <http://plantclinic.cornell.edu.>)

To scout for blossom blight, walk several rows in a blueberry field and scan the bushes for symptoms. When you find any, inspect the flower clusters for twig lesions and fungal sporulation. Also be alert to the presence of insects, webbing, and insect frass, e.g., caused by cranberry fruit worm infestation. To get a better handle on disease severity and changes over time, flag five random bushes and record the number of blighted blossoms per bush every week for the next three to four weeks.

At this time, it would be good to apply a protectant fungicide that provides broad-spectrum control of blossom and twig blight pathogens. A spray of Pristine works well against most causes of blossom blight. Other options are Indar + (Captan or Ziram or CaptEvate) if you have high mummy berry and Phomopsis pressure. CaptEvate and Switch have good activity against Botrytis and anthracnose, and moderate activity against mummy berry and Phomopsis. None of the common fungicides control Pseudomonas bacterial blight, since only copper products are able to control bacterial diseases. No antibiotics are labeled for use in blueberries. Serenade (*Bacillus subtilis*) and Regalia (giant knotweed extract) may also have efficacy against bacterial blight, but have not been evaluated for that purpose in Michigan.

(Article reprinted from: [MSU Fruit Crop Advisory Team Alert, May 10, 2010](#)).

## WEATHER NOTES

### NEW YORK CROP WEATHER SERVICE NOTES

**Week ending April 25th:** Temperatures were near seasonable levels for the week, with nighttime lows in the 20's and 30's. The much above normal temperatures earlier in the month caused an early start to the growing season for most of the lower terrain areas of the state. South of the St. Lawrence and Champlain Valleys frost and freezing temperatures threatened fruit trees on some nights during the week. High pressure and dry weather dominated the region last week with most locations getting less than one tenth of an inch of rain. Higher amounts of rain fell across the far southern part of the state from New York City to the southern tier of central and western New York, but even these areas had below normal rainfall.

Some frost was reported in the region on Friday and Saturday, especially in Niagara County, but no significant damage has been reported yet. Ontario County reported frost on April 20 and 23, but it was too early for damage assessment. On Long Island, strawberry blooms and buds were abundant with full bloom near in many early varieties.

**Week ending May 2nd:** Low pressure tracked slowly east northeast from the Ohio Valley toward the southern New England Coast Sunday through Tuesday, bringing widespread light to moderate rainfall to central and southern portions of the state, along with areas of heavier rainfall across portions of south central New York into southeast New York and Long Island. The low then moved off the New England Coast, as high pressure built east from the Great Lakes for Wednesday through Friday, bringing fair weather along with below normal temperatures. Warmer temperatures averaging above normal, developed by Saturday as a warm front moved northeast across the state. Frost and freeze conditions occurred across portions of central and eastern New York Wednesday through Friday mornings, as the unseasonably chilly air mass spread across the region.

Cold snaps were still a worry to producers in central New York but no frost damage was reported yet. In Albany County, strawberries were ahead of normal. The southern tier was waiting to see if cold temperatures and intermittent snow on Tuesday and Wednesday affected apple and cherry blossoms. In the Hudson Valley, spotty frost was reported, but windy conditions kept it from damaging the crop. Strawberries were also looking good. Windy conditions were also reported on Long Island.

**Week ending May 9th:** A series of cold fronts provided several areas of New York with its first round of severe weather for the season. This also provided the region with rainfall with several locations receiving over one inch of rain. With each passage of these cold fronts, temperatures experienced a large fluctuation throughout the week as preceding the frontal passage, many locations warmed well into the 80's. A strong cold front approached for the start of this past weekend with additional showers and thunderstorms. Temperatures averaged around normal with precipitation near to above normal.

In the Lake Ontario fruit region, strawberries were at early bloom. Fruit development was ahead of normal in the Finger Lakes. Cold temperatures brought scattered frost to the area, but no reported damage yet. High winds in Albany County made spraying difficult. Strawberries were ahead of average.

**Week ending May 16th:** The week started out on the chilly side with a Canadian high pressure system moving across the region with temperatures 10 to 15 degrees below normal. Frost advisories and freeze warnings were needed for the nights of May 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup>. A low moving south of the region on the 12<sup>th</sup> brought rainfall to the entire region except the far north with fairly substantial amounts over central and western New York. This was followed by a warm front the night of the 13<sup>th</sup> resulting in temperatures above normal on Friday the 14<sup>th</sup> with highs in the mid and upper 70's from Albany south with some low 80's in the lower Hudson Valley and the NYC Metro area. Passage of a cold front and an upper trough later on Friday resulted in cooler weather for Saturday.

The Finger Lakes region received multiple mornings of frost. Many producers in Ontario County were concerned that strawberries were adversely affected. Cayuga County reported severe frost damage on strawberries and limited damage on other crops. Madison and Oneida Counties were affected by frost and snow. Damage to the strawberry crop was expected. Blueberries and strawberries were damaged in Onondaga County due to snow May 9 and 10 and frost May 8 – 13. In the Capital region, frost and freezes at the beginning of the week also caused damage. Strawberries were affected in Albany County, while strawberry crop damage was being analyzed in Saratoga County. There was also concern for fruit crops, especially strawberries, in Washington County. The below freezing temperatures on Monday and Tuesday affected strawberries and blueberries in Broome County. First blooms on strawberries were showing black. Approximately 50 percent of blueberry blooms were frozen off. In the Hudson Valley, serious frost conditions existed on May 10 and 11. Dutchess and Ulster Counties had many reports of frost damage to strawberries and blueberries. High winds also knocked fruit together and shredded leaves. Columbia County was still assessing damages to small fruit.

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Questions or Comments about the New York Berry News?

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\*Cornell University provides equal program and employment opportunity.

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## Botrytis Blight in Highbush Blueberry

William J. Sciarappa, Ph.D., Monmouth County Agricultural Agent & Peter Oudemans, Ph.D., Extension Specialist in Pathology

### Causal Organism

Botrytis blossom, twig and berry infection are serious diseases of highbush blueberry that are caused by the gray mold fungus *Botrytis cinerea*. This common fungal pathogen also attacks raspberry, strawberry, and many other fruit and vegetable crops. Depending upon the plant part attacked and the timing of infection, this disease is commonly referred to as either “Botrytis Blossom Blight”, “Twig Blight”, or “Gray Mold” in post-harvest berries. Recognizing these symptoms and understanding where they occur will improve disease management.

### Disease Cycle

This fungus overwinters in the field and nearby locations as mycelium and conidiospores. This innocuous saprophyte survives on decaying leaves, organic matter, and on dead twig tips. Problems arise when environmental conditions become warm and wet, conditions that favor heavy spore production. Massive amounts of windblown spores move towards developing fruit buds and expanding flower petals. If the spring weather remains moist through rain, fog, or high humidity for three to four consecutive days, the spores begin to germinate on soft plant tissue and initiate infection.

There are several important points to understand with this disease. First of all, the pathogen attacks weakened tissues such as older blossoms. Bloom time is the most important period for economic loss. These early disease stages quickly turn the infected blossoms brown which can be confused with crop damage caused by spring frost (Figure 1).



Figure 1. Blossom blight showing infected flowers, peduncle dieback, and stem infection.

Frost damage can be distinguished when blossoms readily fall off unpollinated flowers, whereas infected blossoms tend to stick on longer to the calyx and may show a grayish mycelial growth. When these infected flowers fall on adjacent leaves, they may adhere, much more than blossoms that are killed by frost. Infected blossoms begin a new infection site on soft leaf tissue, which causes leaf spots (Figure 2). These infected blossoms can also spread the disease to nearby leaves and stems (Figure 3).



Figure 2. A leaf infection arising from an infected blossom carrying the fungus. This type of infection cannot arise from spores.



Figure 3. Fungus oozing from infected berry above invades leaf surface.

Fruit that is set is generally resistant to infection by these spores. However, infected blossoms (corollas) provide an entryway for spread of the disease to hardened off leaves and fruit. Fruit infections begin as purple blotches, which rapidly destroy immature, tender fruit (Figure 4). After infection, dust-like spores become noticeable and have a distinctive grayish-white color.



Figure 4. Tender young berries are infected by Botrytis.

## Horticultural Practices for Disease Management

A fungicide control program alone is expensive and not sustainable. In order to minimize inoculum and reduce Botrytis disease pressure, a cultural management program should be planned with the following points in mind:

1. Choose resistant varieties.
2. Avoid planting new fields in low lying areas having long periods of frost or fog.
3. Improve air drainage in established fields to reduce frost injury. Partially frosted blossoms are prime candidates for Botrytis invasion.
4. Prune out dead canes and twigs.
5. Improve ventilation within the bush by detailed pruning of center branches to facilitate drying within the bush.
6. Sanitize field floor by removing dead leaves and twigs; then raking, sweeping, and hoeing.
7. Avoid excessive nitrogen fertilizer application in the spring, which softens plant tissue and increases disease severity.

## Fungicide Decisions

In considering a fungicide application for “Botrytis Blossom Blight”, the following questions can be used in the decision-making process:

1. Is there evidence of blossom blight in the field?
2. Are the blighted blossoms still present on the bush?
3. Is there evidence of fruit infection?
4. Is there a sufficient healthy crop to protect?

If you have answered YES to these questions, a fungicide application is warranted. A chemical control program is targeted at preventing infection of flower petals when bloom is extended. At this time there are six fungicides with varying effects that can be used for Botrytis control (see Table 1). More details can be found on the product labels and in the most current Rutgers Cooperative Research and Extension Blueberry Recommendations Guide.

Table 1. Fungicides labeled for Botrytis Blight management.

Fungicide	Max. amt. per season	Max # of applications	Rate product/acre	Interval days	REI re-entry interval	PHI pre-harvest interval
<b>Captan 80/50</b>	<b>43.75 - 70 lbs.</b>	<b>14</b>	<b>3.1-5 lbs.</b>	<b>7-10</b>	<b>4 days</b>	<b>0 days</b>
<b>Ziram 76DF</b>	<b>20 lbs.</b>	<b>5</b>	<b>3-4 lbs.</b>	<b>7-10</b>	<b>48 hrs.</b>	<b>3 wks. post bloom</b>
<b>Abound</b>	<b>46.2 oz.</b>	<b>3</b>	<b>6.2-15.4 oz.</b>	<b>7-14</b>	<b>4 hrs.</b>	<b>0 days</b>
<b>Switch 62.5WG</b>	<b>56 oz.</b>	<b>4</b>	<b>11-14 oz.</b>	<b>7-10</b>	<b>12 hrs.</b>	<b>0 days</b>
<b>Elevate 50 WDG</b>	<b>6 lbs.</b>	<b>4</b>	<b>1.5 lbs.</b>	<b>7-10</b>	<b>12 hrs.</b>	<b>0 days</b>
<b>Captevate</b>	<b>21 lbs.</b>	<b>N/A</b>	<b>3.5 – 4.7 lbs.</b>	<b>N/A</b>	<b>72 hrs.</b>	<b>0 days</b>

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# **LIMITING BIRD DAMAGE IN FRUIT CROPS: INFORMATION, PLEASE!**

*Cathy Heidenreich,*

**C**ornell has been invited to participate in a planning program for a future Specialty Crops grant proposal being put forward by Michigan State University. The research focus of the proposal is limiting bird damage in fruit crops. I will be traveling to attend a preliminary planning meeting in August this year along with Juliet Carroll, NYS Fruit IPM Coordinator and Jay Boulanger, Wildlife Biologist from main campus. As part of our participation, we need to make a presentation on bird damage to fruit crops in NY including current and critical gaps in knowledge.

Please take a few minutes to provide responses the questions below to assist us in gathering information to present at the meeting. We would like to have any insights you may wish to share on the topic by Wednesday May 26<sup>th</sup>. You may e-mail your response to [mcm4@cornell.edu](mailto:mcm4@cornell.edu) or mail it to:

Cathy Heidenreich, NYSAES Cornell University, Dept. Plant Pathology and Plant Microbe Microbiology, 630 West North Street, Geneva, NY 14456.

Thanks!

Cathy, Juliet, and Jay

1. Which berry crops are at greatest risk?
2. What level of economic damage occurs?
3. What species of birds are most frequently involved?
4. What bird management tactics are you using?
5. Which bird management tactics work best?
6. What research is needed in the future on bird damage management?

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**NY NASS WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, April 25<sup>th</sup>, 2010**

	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	69	31	51	3	18	99	81	0.01	-0.69	0.89	-1.60
Glens Falls	69	31	49	3	6	59	49	0.04	-0.66	1.24	-1.21
Poughkeepsie	71	30	51	2	19	122	93	0.27	-0.57	0.95	-1.89
<b>Mohawk Valley</b>											
Utica	65	28	45	2	2	54	46	0.00	-1.05	1.14	-2.74
<b>Champlain Valley</b>											
Plattsburgh	67	34	50	4	8	50	38	0.12	-0.58	1.60	-0.72
<b>St. Lawrence Valley</b>											
Canton	65	29	47	3	0	67	59	0.01	-0.69	1.09	-1.26
Massena	68	28	49	4	10	64	54	0.00	-0.63	0.63	-1.58
<b>Great Lakes</b>											
Buffalo	69	33	49	2	11	112	94	0.05	-0.65	1.54	-0.83
Colden	67	28	45	0	3	90	82	0.07	-0.82	1.51	-1.66
Niagara Falls	70	34	50	3	15	106	85	0.01	-0.74	2.05	-0.60
Rochester	68	33	50	2	14	140	118	0.04	-0.59	0.99	-1.17
Watertown	64	24	45	-1	1	77	67	0.00	-0.63	0.93	-1.14
<b>Central Lakes</b>											
Dansville	67	29	47	-2	3	89	70	0.30	-0.40	1.45	-0.89
Geneva	67	32	48	1	5	108	92	0.11	-0.59	0.88	-1.53
Honeoye	69	28	47	-1	7	120	103	0.19	-0.51	1.21	-1.24
Ithaca	67	26	45	-2	3	97	85	0.20	-0.50	1.12	-1.29
Penn Yan	67	31	48	2	10	129	113	0.06	-0.64	0.75	-1.66
Syracuse	70	31	50	2	19	125	105	0.00	-0.78	0.72	-2.06
Warsaw	64	30	46	2	4	80	74	0.08	-0.74	1.30	-1.52
<b>Western Plateau</b>											
Alfred	67	28	47	3	3	91	86	0.39	-0.28	1.31	-1.01
Elmira	69	25	48	0	9	109	95	0.22	-0.41	1.03	-1.18
Franklinville	67	24	43	0	1	60	56	0.65	-0.13	1.83	-0.90
Sinclairville	69	27	46	2	0	86	78	0.77	-0.14	1.65	-1.53
<b>Eastern Plateau</b>											
Binghamton	66	33	49	3	13	132	120	0.26	-0.51	1.25	-1.33
Cobleskill	67	33	48	3	3	71	61	0.02	-0.75	1.11	-1.63
Morrisville	68	29	47	2	7	77	70	0.08	-0.69	1.65	-0.89
Norwich	68	27	46	-1	1	69	59	0.12	-0.69	1.41	-1.36
Oneonta	67	30	47	3	3	75	67	0.12	-0.72	1.41	-1.43
<b>Coastal</b>											
Bridgehampton	68	37	53	6	26	83	72	0.25	-0.66	1.35	-1.97
New York	72	47	58	5	59	225	166	0.67	-0.24	1.10	-2.04

1. Departure from Normal 2. Year to Date: Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning.

**NY NASS WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, May 2<sup>nd</sup>, 2010**

	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	35	54	3	42	141	99	0.37	-0.33	1.26	-1.93
Glens Falls	82	26	50	0	35	94	67	0.31	-0.44	1.55	-1.65
Poughkeepsie	88	31	55	3	43	165	107	0.79	-0.13	1.74	-2.02
<b>Mohawk Valley</b>											
Utica	80	30	49	3	22	76	56	0.12	-0.93	1.26	-3.67
<b>Champlain Valley</b>											
Plattsburgh	71	33	48	-1	18	68	39	0.93	0.27	2.53	-0.45
<b>St. Lawrence Valley</b>											
Canton	75	31	48	1	17	84	61	0.73	0.03	1.82	-1.23
Massena	70	33	49	1	17	81	54	0.86	0.26	1.49	-1.32
<b>Great Lakes</b>											
Buffalo	77	37	54	4	41	153	113	0.53	-0.17	2.07	-1.00
Colden	79	32	50	3	29	119	95	0.59	-0.25	2.10	-1.91
Niagara Falls	78	34	55	5	47	153	108	0.27	-0.43	2.32	-1.03
Rochester	82	33	54	3	45	185	138	0.57	-0.06	1.56	-1.23
Watertown	80	34	52	4	27	104	78	0.19	-0.43	1.12	-1.57
<b>Central Lakes</b>											
Dansville	82	31	52	3	37	158	116	0.90	0.25	1.39	-1.60
Geneva	83	32	53	3	39	147	110	0.97	0.27	1.85	-1.26
Honeoye	84	32	53	4	44	162	124	0.71	0.03	1.92	-1.21
Ithaca	85	27	51	3	38	135	106	1.17	0.47	2.29	-0.82
Penn Yan	85	36	53	4	42	171	134	1.16	0.46	1.91	-1.20
Syracuse	86	36	54	4	46	171	126	0.18	-0.59	0.90	-2.65
Warsaw	78	31	50	4	32	112	94	0.86	0.09	2.16	-1.43
<b>Western Plateau</b>											
Alfred	82	31	51	5	32	123	106	0.82	0.19	2.13	-0.82
Elmira	87	34	53	4	41	150	117	0.95	0.29	1.98	-0.89
Franklinville	79	26	48	3	27	87	74	0.65	-0.12	2.48	-1.02
Sinclairville	80	29	50	4	30	116	95	0.53	-0.37	2.18	-1.90
<b>Eastern Plateau</b>											
Binghamton	84	32	52	3	45	177	147	1.01	0.24	2.26	-1.09
Cobleskill	85	32	51	3	24	95	69	0.51	-0.26	1.62	-1.89
Morrisville	82	30	49	2	31	108	86	0.98	0.21	2.63	-0.68
Norwich	86	30	50	2	28	97	70	1.31	0.49	2.72	-0.87
Oneonta	85	32	51	4	29	104	82	1.30	0.40	2.71	-1.03
<b>Coastal</b>											
Bridgehampton	73	37	53	3	27	110	82	0.92	0.01	2.27	-1.96
New York	83	42	59	4	63	288	187	1.45	0.54	2.55	-1.50

1. Departure from Normal 2. Year to Date: Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning.

**NY NASS WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, May 9<sup>th</sup>, 2010**

	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	87	36	61	8	79	220	142	0.95	0.22	2.21	-1.71
Glens Falls	85	35	59	7	57	161	106	1.55	0.78	3.10	-0.87
Poughkeepsie	90	39	64	10	102	267	167	0.42	-0.56	2.16	-2.58
<b>Mohawk Valley</b>											
Utica	76	27	54	6	43	119	81	2.75	1.77	4.01	-1.90
<b>Champlain Valley</b>											
Plattsburgh	84	36	59	8	68	136	80	0.70	0.07	3.23	-0.38
<b>St. Lawrence Valley</b>											
Canton	82	31	57	7	58	157	110	1.09	0.42	3.16	-0.56
Massena	82	33	59	8	68	149	95	0.94	0.38	2.43	-0.94
<b>Great Lakes</b>											
Buffalo	80	34	56	3	50	203	131	1.68	1.01	3.75	0.01
Colden	79	32	55	5	49	168	120	1.75	0.95	3.85	-0.96
Niagara Falls	81	35	58	5	61	214	133	1.51	0.84	3.83	-0.19
Rochester	83	33	58	5	62	247	162	1.53	0.94	3.09	-0.29
Watertown	81	33	56	6	54	158	108	1.48	0.92	2.60	-0.65
<b>Central Lakes</b>											
Dansville	79	33	56	4	51	209	134	1.54	0.91	2.93	-0.69
Geneva	83	31	59	7	66	213	144	1.29	0.65	3.14	-0.61
Honeoye	82	33	59	7	66	228	158	1.63	1.00	3.55	-0.21
Ithaca	81	33	58	7	60	197	141	1.13	0.43	3.42	-0.39
Penn Yan	81	33	59	7	67	238	169	1.08	0.44	2.99	-0.76
Syracuse	84	33	60	6	70	241	158	1.98	1.24	2.88	-1.41
Warsaw	78	33	55	6	48	160	121	2.40	1.63	4.56	0.20
<b>Western Plateau</b>											
Alfred	79	34	56	7	50	173	135	1.54	0.95	3.67	0.13
Elmira	81	34	59	7	64	214	150	1.48	0.79	3.46	-0.10
Franklinville	78	31	54	6	42	129	100	1.76	0.99	4.24	-0.03
Sinclairville	79	36	56	7	50	166	124	2.00	1.16	4.18	-0.74
<b>Eastern Plateau</b>											
Binghamton	79	31	59	7	67	244	185	1.12	0.40	3.38	-0.69
Cobleskill	84	32	58	8	62	157	106	1.25	0.48	2.87	-1.41
Morrisville	81	28	56	5	49	157	111	2.01	1.24	4.64	0.56
Norwich	84	33	56	5	46	143	90	1.28	0.45	4.00	-0.42
Oneonta	84	33	58	9	59	163	118	1.56	0.61	4.27	-0.42
<b>Coastal</b>											
Bridgehampton	77	44	63	11	94	204	148	0.63	-0.28	2.90	-2.24
New York	90	46	70	12	138	426	267	1.51	0.60	4.06	-0.90

1. Departure from Normal 2. Year to Date: Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning.

**NY NASS WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT  
NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, May16<sup>th</sup>, 2010**

	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	75	29	50	-8	27	247	120	0.61	-0.16	2.82	-1.87
Glens Falls	75	26	48	-7	24	185	91	0.27	-0.56	3.37	-1.43
Poughkeepsie	80	28	51	-7	32	299	143	0.71	-0.27	2.87	-2.85
<b>Mohawk Valley</b>											
Utica	69	27	43	-10	7	126	62	0.76	-0.22	4.77	-2.12
<b>Champlain Valley</b>											
Plattsburgh	71	29	48	-7	22	158	63	0.09	-0.54	3.32	-0.92
<b>St. Lawrence Valley</b>											
Canton	65	27	46	-8	9	166	86	0.30	-0.33	3.46	-0.89
Massena	67	27	49	-7	21	170	78	0.05	-0.51	2.48	-1.45
<b>Great Lakes</b>											
Buffalo	65	33	49	-8	15	218	101	0.89	0.19	4.64	0.20
Colden	68	27	45	-10	8	176	94	1.11	0.34	4.96	-0.62
Niagara Falls	69	28	49	-8	15	229	100	0.91	0.28	4.74	0.09
Rochester	73	32	49	-8	18	265	130	0.70	0.11	3.79	-0.18
Watertown	66	25	48	-6	16	174	90	0.30	-0.30	2.90	-0.95
<b>Central Lakes</b>											
Dansville	76	28	47	-10	16	225	104	1.16	0.53	4.09	-0.16
Geneva	76	31	47	-8	17	230	118	1.06	0.43	4.20	-0.18
Honeoye	76	27	47	-9	21	249	134	0.90	0.29	4.45	0.08
Ithaca	79	27	47	-8	23	220	125	1.01	0.29	4.43	-0.10
Penn Yan	78	32	50	6	28	266	154	0.89	0.26	3.88	-0.50
Syracuse	79	31	49	-8	23	264	131	0.82	0.12	3.70	-1.29
Warsaw	70	29	44	-9	7	167	97	1.16	0.39	5.72	0.59
<b>Western Plateau</b>											
Alfred	76	28	46	-7	15	188	119	1.29	0.66	4.96	0.79
Elmira	80	26	50	-6	29	243	138	1.00	0.30	4.46	0.20
Franklinville	74	24	44	-8	12	141	88	1.34	0.57	5.58	0.54
Sinclairville	74	26	46	-7	13	179	107	1.47	0.63	5.65	-0.11
<b>Eastern Plateau</b>											
Binghamton	77	30	47	-9	23	267	167	1.07	0.30	4.45	-0.39
Cobleskill	78	28	46	-9	15	172	85	0.74	-0.06	3.61	-1.47
Morrisville	78	29	46	-9	14	171	90	0.83	-0.01	5.47	0.55
Norwich	80	26	46	-9	20	163	72	0.96	0.12	4.96	-0.30
Oneonta	76	29	47	-7	16	179	102	0.92	-0.06	5.19	-0.48
<b>Coastal</b>											
Bridgehampton	71	36	52	-4	28	232	136	0.63	-0.21	3.53	-2.45
New York	82	43	58	-4	56	482	246	0.41	-0.44	4.47	-1.34

1. Departure from Normal 2. Year to Date: Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning.