New York Berry News

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What's Inside

This months edition of the NY Berry News is coming to you a little bit earlier than "normal" because, simply, the season progressed rather rapidly with the bouts of warm weather we've had. The warm weather during bloom provided perfect conditions for anthracnose of both blueberry and strawberry to get a foothold. Several blueberry plantings in the region are experiencing varying degrees of blossom blight due to anthracnose, setting the stage for a potentially high "ripe rot" season. It's a little too early to tell how strawberries will be affected, but I would venture to guess that if the weather during harvest is even mildly favorable for anthracnose, there is enough inoculum out there to get an epidemic rolling. The wet weather and saturated soils have also been favorable for red stele; this disease is becoming more evident as fruit development stresses the plant. With wet weather comes gray mold; we take a look at managing this disease in brambles as the fruit develop and increase in susceptibility. But let's not forget about the insects. As we approach summer and the berries ripen, there are a number of pests that we should be concerned about managing. All of these pests, plus tips on strawberry renovation – which is not that far away – are covered in this month's edition of the New York Berry News.

Upcoming Meetings

June 29-30, 2004: *Use of High Tunnel Technology*, High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA. To sign up for the workshop or for more information contact Bill Lamont, Phone: 814-865-7118 or E-mail: wlamont@psu.edu (see article below for more details).

August 3-4, 2004: *Use of High Tunnel Technology*, University of New Hampshire Horticulture Farm, Durham, NH. To sign up for the workshop or for more information contact Bill Lamont, Phone: 814-865-7118 or E-mail: wlamont@psu.edu (see article below for more details).

August 10-12, 2004: *Empire Farm Days*, Rodman Lott & Son Farms, Seneca Falls, NY. For more information call 877-697-7837, or visit www.empirefarmdays.com

August 18-20, 2004: *NASGA's Summer Tour*, Quebec City, Canada, for more information you may call Patricia Heuser at 814-2383364 or visit www.nasga.org/meetings/04summertour/promo.htm. See below for more details!

September 25-October 2, 2004: *Haygrove's North American Grower Tour of England's High Tunnels*, London, UK. For more information call 866-HAYGROVE (see article below).

NASGA's Seventh Annual Summer Tour

This is the NASGA tour you've been waiting for! Travel writers say that "Québec City is as historic as it is picturesque" and "the most European City on this continent." The ambiance, the food, the attractions, the culture, and the lovely people of Québec would be enough to make this tour worth taking, but it won't disappoint growers eager to learn either. Québec's climate and landscape present unique challenges to the berry grower. With visits to 11 farms and farm markets, the NASGA Summer Tour will expose you to the techniques these hardy growers have employed to create a thriving region of berry production and marketing. From nursery operations to u-pick farms, and from plasticulture to using snow cover for winter protection...

you'll experience strawberry, blueberry and bramble production and marketing the Québec way. Among the stops on the tour will be Production horticole Demers, the farm of NASGA member Rejean Demers and one of the "Showcase" farms at the 2004 North American Berry Conference. The tour schedule includes fun time with a visit to the old city of Québec and a lovely evening dinner cruise on the St. Lawrence River. However, you can be sure you'll want to plan at least one extra day in your trip to see the many features of our host city. In Québec you'll find all the charm of a European city, but without some of the travel worries. Although you'll be surrounded by French culture, most people in Québec are bi-lingual so it is easy to communicate everywhere. You can get there fairly easily by car, by air at Jean-Lesage International Airport, or by rail via Rail Canada with connections to Amtrak. And based on the current exchange rate, you'll also find lots of shopping bargains and plenty of places to shop. The tour will fill up fast, so be sure to pre-register early. For more information you may call Patricia Heuser at 814-2383364 or visit www.nasga.org/meetings/04summertour/promo.htm to download a program brochure and registration forms.

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

Bill Lamont, Department of Horticulture, Pennsylvania State University, State College, PA

Two workshops funded by a Professional Development Grant from Northeast SARE Program are being offered to train extension specialists, county agents and vocational agriculture teachers on the use of high tunnel technology. The objective of the program is to train the trainers. Each workshop will be two days and two nights lodging and mileage up to 500 miles will be covered for participants. The dates and location of the workshops are: June 29 and 30, 2004 at the High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA and August 3-4, 2004 at the University of New Hampshire Horticulture Farm, Durham, NH. The states being solicited for participants are Connecticut, Delaware, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, ***New York***, Pennsylvania, Rhode Island, Vermont, West Virginia, Virginia, Ohio and Washington, D.C. Class size will be limited to 50 per workshop. Each workshop will be two days with a mixture of classroom presentations on the different components of high tunnel technology, "hands-on" participation, and presentations by growers utilizing this technology. A high tunnel manual will be given to each participant and will serve as a reference on all aspects of this technology. To sign up for the workshop or for more information contact Bill Lamont, Phone: 814-865-7118 or E-mail: wlamont@psu.edu

Haygrove High Tunnel Tour Date Set for September 2004

Jessica Krueger, Haygrove High Tunnels

Due to numerous requests from interested growers, Haygrove Tunnels has rescheduled their second annual North American grower tour of England's high tunnels. The new dates are September 25 thru October 2 and will feature Haygrove's home farm with 220 acres of strawberries, raspberries, cherries and lilies produced under tunnels. The latest developments in Haygrove's multi-bay tunnels, season extension, mechanization and spectral filter horticultural films will be showcased. The grower tour will visit other growers using Haygrove tunnels. At present, these include Hilliers Nursery, Intercrop Farms (leading salad / vegetable producer), Edward Vinson Plants Ltd. (plant breeder / small fruit grower) and Hurst Farm (direct marketer / table top strawberry producer). Additional visits will include the city of Oxford, Windsor Castle (home of Queen Elizabeth II), Canterbury Cathedral, Chartwell House (Winston Churchill's home) and an open day to visit London.

The tour will depart from the headquarters hotel near Heathrow airport at 8:00 a.m. September 26 and return to the same hotel September 30 and October 1. The price of $799 is based on double occupancy ($1199 single) and includes 7 nights lodging, coach transportation in England, and two dinners sponsored by Haygrove. Airfare is not included. Sign up deadline is July 15, 2004 and space is limited. To join this informative, educational tour, call 866-HAYGROVE.

Eat Your Berries!

Lori Bushway, Department of Horticulture, Cornell University, Ithaca, NY

The signs of summer are now appearing: the "*U-PICK STRAWBERRIES*" signs that is! June marks the start of our local fruit season with naturally sweet and juicy strawberries. Beyond their delicious flavor, local strawberries are high in vitamin C, folic acid, potassium and fiber. You need only seven medium strawberries to obtain 141% of the recommended daily allowance of vitamin C. However, why stop at seven when you have barely consumed 46 calories of a delightfully sweet, fat-free treat. In addition, strawberries are high in natural antioxidants such as ellagic acid and anthocyanins. These compounds help our bodies battle harmful by-products of metabolism called free radicals; advancing heart health, reducing the risk of certain types of cancer, and boosting total body wellness.

Plump, juicy raspberries are also a perennial summer favorite. These delicate fruits receive rave reviews for their delicious sweet flavor and they are also nutritional powerhouses, as well. Raspberries are rich in vitamins A, C, E and folic acid, iron and potassium. They are packed with fiber, some in the form of pectin, which has been linked with lowering cholesterol.

These tasty treats are also relatively low in sugar, so they won't stimulate severe insulin swings if eaten in moderation. In addition, raspberries are high in natural antioxidants including anthocyanins and phytochemicals such as beta-carotene and ellagic, coumaric and ferulic acids.

And last but not least, our native blueberries are gaining popularity worldwide as a delicious treat that doubles as a powerful disease fighter. Revered for centuries in North America, blueberries rank number one in antioxidant activity when compared to 40 other fresh fruits and vegetables. The anthocyanin pigments that make blueberries blue are thought to be the major antioxidant responsible for the high health benefit of blueberries. Researchers have specifically linked eating blueberries with a reduction in the build up of so called "bad" cholesterol that contributes to cardiovascular disease and stroke, an easing of eye fatigue and a slowing of age-related loss in mental capacity. People who ate a cup of blueberries a day have performed 5 to 6 percent better on motor skills tests than the control group. Another compound found in blueberries that inhibits bacteria likely plays a role in promoting urinary tract health and reduces the risk of infection. It appears to work by preventing bacteria from adhering to the cells that line the walls of the urinary tract.

The immediate reward for berry eaters is equally fulfilling as the long term health benefits. These berries add interest, lively color and flavor to both indulgent and healthy recipes. Enjoy them fresh, in a muffin, on waffles, on ice cream, in a smoothie, or tossed into cereal, salads or yogurt. Stock the freezer with bags of berries that have been rinsed and initially frozen spread out on a baking sheet, or make some jam or jelly. When the days are short and the landscape is dull, it is always a pleasure to open a jar or the freezer to taste the sweetness of last summer. New York locally field grown strawberries, raspberries and blueberries are available from June into October.

Successful Ecolabels Link Food Freshness, Local Family Farms

Leopold Center for Sustainable Agriculture

Farmers looking to market their locally grown products may find that what appears on the outside of the package is as critical as what they put inside. In an Internet survey conducted in November 2003, consumers from eight Midwestern states responded very positively to ecolabels that emphasized freshness and local production. The Leopold Center for Sustainable Agriculture and the Iowa State University Business Analysis Laboratory used the Internet to show consumers four versions of ecolabels, a seal or logo indicating that a product has met a certain set of environmental and/or social standards or attributes. On the ecolabels were pictures of strawberries along with several different tag lines related to product freshness and local origins. Survey recipients were asked to choose which ecolabels would encourage them to purchase locally grown items. In addition to responding to the ecolabels, survey recipients were asked questions about how they defined "local" when buying food, which product attributes were most important when buying local, and the connection between "family farm" and other terms such as locally grown, organic, and pesticide-free. The ecolabel that was most influential in spurring respondents to purchase local foods was "Freshness-dated, so you know when it left the farm." Rich Pirog, Leopold Center program leader in marketing and food systems research, says of the survey findings: "The responses to the tag lines support the premise from an earlier study that the use of freshness dating on locally grown products is a concept with tremendous market potential. However, freshness dating should be extended beyond stating how long a product will retain quality to include how fresh (time from harvest) the product is when it arrives at the store or point of sale."

Consumers clearly were aware of where their food currently comes from--less than 16 percent of the respondents believed that more than half of their food items came from within their state. When asked how closely the terms grown locally, pesticide-free, organic, grown in your state, product of USA, and humanely raised were related to the term "family farm," the majority of respondents (68 percent of those who viewed the ecolabels) cited grown locally as the closest match. If price and visual appearance were the same, the survey respondents were most likely to select a locally grown or locally grown and pesticide-free meat or produce item compared to a certified organic product, regardless of where the organic item was produced. These findings indicate that the term locally grown commands a great deal of power and influence for consumers when purchasing meat or produce items. It also implies that consumers do not understand the meaning of "certified organic" as well as they do locally grown, nor do they perceive that the same sense of value applies to organic meat and produce items as to locally grown products. "Understanding how and why consumers value locally grown products may offer a competitive advantage to farmers looking to tap into area markets," says Pirog. "It also sends a message to organic growers that locally or regionally grown organic products may be perceived as being more highly valued than organic products with no further level of differentiation."

In a second, smaller Iowa-based Internet survey, 12 to 18 percent of consumer respondents were willing to pay 30 percent or more for food products (depending on the food item) that combine the attributes of locally grown with environmental and community stewardship. This is encouraging to small and midsize farmers who want to use locally grown as a beneficial way to differentiate their foods in the marketplace. It is clear from the survey, however, that these consumer respondents want the farms making these marketing claims to be inspected and certified. November's study was the second part of broader look at the positive role that ecolabels could play in promoting locally grown farm products. Pirog noted that consumer respondents were selected randomly from e-mail address lists owned by a survey administrator, but

were not a statistically random sample of the general population. Pirog worked with the Business Analysis laboratory at Iowa State University to conduct the research. The Lab involves graduate and undergraduate students from the ISU colleges of business, education, and engineering who work in teams to solve business problems for companies.

The report "Ecolabel Value Assessment Phase 2: Consumer Perceptions of Local Food" is available at the Leopold Center's web site (www.leopold.iastate.edu), or by contacting the Center at (515) 294-3711. Results from the earlier ecolabel research "Ecolabel Value Assessment: Consumer and Food Business Perceptions of Local Foods" are available at: www.leopold.iastate.edu/pubs/staff/ecolabels/index.htm

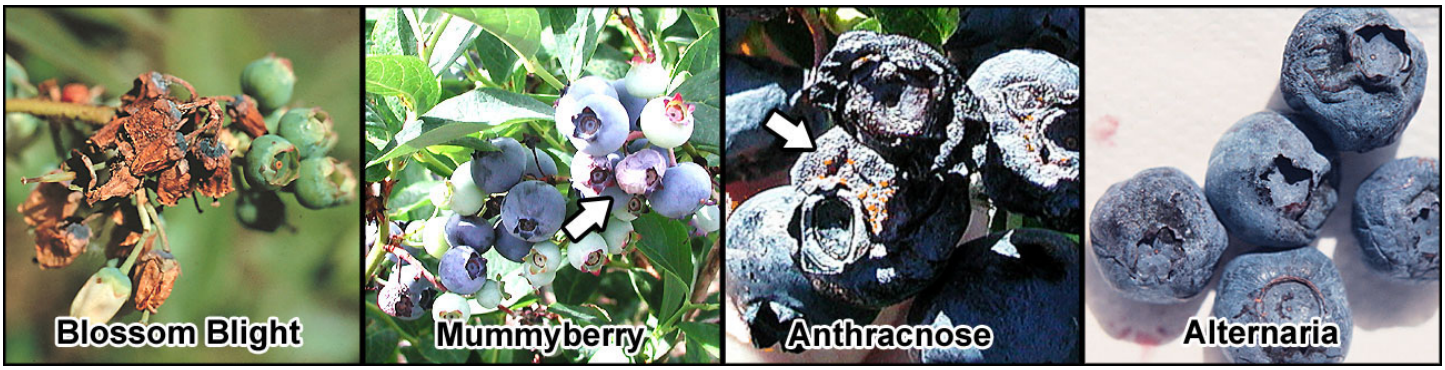
Blueberry Fruit Rots (with particular emphasis on anthracnose)

Bill Turechek, Dept. of Plant Pathology, Cornell University, Geneva, NY

As we are nearing the beginning of blueberry harvest, this article will summarize the most common berry rots growers can expect to encounter during harvest. Mummyberry, anthracnose, and alternaria fruit rot are the most common fruit rots occurring in New York. Gray mold or botrytis fruit rot can also occur, however the fruit rot phase is generally less important than the blossom and twig blight phase of the disease.

Botrytis blossom and twig blight is a disease that is common in years when cool, rainy weather occurs during bloom. Virtually all young and tender tissues are susceptible to attack; older tissue is resistant to infection. Infected blossoms and young shoots turn brown and become covered with a fuzzy gray mass of spores. This year I have seen a number of plantings with blossom blight, but it happens to be a mixture of both botrytis blight and blossom blighting due to anthracnose. Mature fruit can become infected by *Botrytis*, however, symptoms do not typically develop until after the fruit have been harvested. Managing this disease effectively requires the application of fungicides during bloom. After bloom, fungicides used to manage anthracnose and alternaria fruit rots should keep botrytis in check.

Mummyberry is the most serious fruit rotting disease of blueberry in NY. In early spring, infected berries produce a mushroom-like structure called an apothecia in which the primary inoculum (i.e., ascospores) are formed. Ascospores are disseminated by wind and rain and infect emerging leaf buds and shoots. Infected shoots and leaves wilt, turn brown and die; this is the shoot blight phase of the disease. Its appearance is similar to, and sometimes confused with, frost damage. Infected shoots produce conidia (a second kind of spore) that infect the blossoms. Blossom infections are not evident until the fruit begins to ripen later in the season when the berries begin to shrivel and turn a pinkish color. These are "mummyberries" and they have been colonized by the mummyberry fungus. Infected berries eventually fall to the ground, shrivel, and turn dark brown in which they will serve as the source of primary inoculum the following spring.



Anthracnose, also known as 'ripe rot', occurs less frequently than mummyberry in New York. The disease is caused by the same fungus that causes anthracnose on strawberry. The most common symptom of the disease is the orange spore masses produced on ripe and rotting berries. But the fungus can cause blossom and twig blighting when conditions are warm and wet during bloom, as was seen throughout NY this year, and looks very similar to blight caused by *Botrytis*. The fruit rot appears just as the berries start to ripen at harvest and often begins as a softening and sinking of the berry at the blossom end of the fruit. During warm and wet weather, salmon to orange-colored spores can ooze from infected berries and these are disseminated by splashing water where they can infect healthy berries. The fungus is also capable of infecting leaves where it causes brown-black necrotic lesions that vary in size and shape from small and circular to large and irregular. It has been suggested that at least 12 hours of continual wetness with temperatures between 59 and 85 F is required for anthracnose spores to germinate and cause infection. In my opinion, a 12 hour wetting period is probably a good estimate of what is required for infection to occur at cooler temperatures. However, when the temperature exceeds 80 F the wetting period needed for significant infection is probably much shorter. Based on studies done with strawberry, a 3-6 hour wetting period when temperatures are higher than 80 F could lead significant infection.

The spores of the fungus are rain-splash dispersed. This means that irrigation water can aid in the spread of the pathogen. Monitoring spore releases with rain water spore traps, Annemiek Schilder in Michigan has shown that peak spore production usually occurs around bloom, followed by a second peak around fruit ripening. According to Annemiek the first peak in spore production is thought to originate from infected fruiting twigs from the previous year. These spores cause the primary infections of blossoms and young green berries. These infections typically remain dormant until the fruit ripens; however, due to the exceptionally warm weather we experienced during bloom some of these infections have led to blossom and twig blighting in some plantings. The second peak most likely results from sporulation of the fungus on ripe berries. At this time, healthy berries in proximity to infected berries can become infected and either rot in the field if harvest is delayed, called "ripe rot", or they may start to rot after harvest.

Alternaria fruit rot is not as common as anthracnose. Berries infected with *Alternaria* tend to develop a soft, watery rot as the fruit begins to ripen and a green to black mat of fungus forms at the calyx end of the fruit. The fungus can also infect leaves causing irregularly shaped, brown to gray spots 1-5 mm in diameter. Spores produced on the leaves are probably the primary source of inoculum for fruit. However, once the disease appears on fruit, they are an equally if not more important source of inoculum because of the fruit to fruit contact.

Disease management: Ideally, management of the fruit rots begins at bloom and continues up to harvest. An application of Indar 75WSP PLUS Ziram Granuflo (3 lb/A) is a good tank mix that targets all three fruit rots. Indar has good activity against the blossom blight phase of mummyberry; Ziram Granuflo has activity against anthracnose, Alternaria fruit rot as well as Phomopsis twig blight. (Note: Alternaria fruit rot is not on the Ziram 76DF label). This year a section 18 for Indar has been granted for New York and this label needs to be in your possession if you plan on using it. You can obtain a copy of the section 18 by visiting: http://www.nysaes.cornell.edu/pp/extension/tfabp/pestnews.shtml.

For anthracnose protectant sprays should be the major emphasis now. Abound, Captan, and Ziram can be used to protect the developing fruit. Ziram will provide a longer residual activity than Captan so the interval between applications can be stretched to 14-days, but growers should be hesitant to stretch the interval too long if significant blossom blighting occurred. Ziram Granuflo covers the fruit with a whitish residue that is not appealing to consumers. Although it has a 14-day PHI, it may be best to leave a 20-30-day PHI for Ziram to allow sufficient time for the residue to wash off. Captan can be applied up to the day of harvest, however, most formulations have a 96 hr reentry interval; the 80WDG formulation has a 72 hr REI. Abound is likely to be your most effective fungicide, but growers should adhere to label restrictions to manage resistance development. Caution needs to be exercised when using Abound because it is extremely phytotoxic to certain apple varieties. Abound should NOT be sprayed where spray drift may reach apple trees, when conditions favor drift beyond intended area of application, and do not spray Abound with spray equipment intended for use on apple trees.

Strawberry Anthracnose

Bill Turechek, Dept. of Plant Pathology, Cornell University, Geneva, NY

Anthracnose is a serious disease of strawberry that affects the foliage, runners, crowns and, most importantly, the fruit. In the Northeast, the disease is caused primarily by the fungal pathogen *Colletotrichum acutatum*. Although the pathogen is endemic to the Northeast, it is sometimes introduced into plantings on infected nursery plants. Anthracnose is considered a warm-weather disease with an optimum temperature for development near 80 F. Consequently, the disease is generally not a problem in the Northeast unless warmer temperatures and rainfall prevail during fruit set and harvest. The spores of the pathogen require free water on the plant surface to cause infection, and splashing water is required to disperse spores. Once the pathogen is established in the field, the fungus can survive the winter on plant debris and mummified fruit where it may become a problem in subsequent years.

Symptoms. The pathogen attacks the fruit, runners, petioles, and the crown of the plant; however, we have not been able to establish crown infections from greenhouse inoculation with New York isolates. On the petioles and runners, dark elongated lesions develop which often girdle the stem (Fig. A). When petioles or runners become girdled, individual leaves or entire daughter plants may wilt and die. On fruit, symptoms first appear as whitish, water soaked lesions up to 3 mm in diameter. As lesions develop, they turn a light tan to dark brown and eventually become sunken and black with in 2 to 3 days (Figs. B and C). This is known as black spot. After several days, lesions may be covered with salmon-colored spore masses. Infected fruit eventually dry down to form hard, black, shriveled mummies. Fruit can be infected at any stage of development. Both ripe and unripe fruit can be affected. When crown tissue becomes infected, the entire plant may wilt and die. The internal tissue of infected crowns will be firm and reddish brown (seen by slicing through the crowns. Crown tissue may be uniformly discolored or streaked with brown, and infected tissues may also produce salmon-colored spores. Leaves can also become infected and advanced lesions appear similar to those caused by *Phomopsis*.

Disease management. In plantings with a history of the disease, control measures should begin early and continue through harvest. Anthracnose first develops on petioles and/or as latent infections (invisible) on leaves where the lesions produce spores that serve as the source of inoculum for fruit infection. Anthracnose fruit rot is very difficult to control if disease has been left to develop unchecked prior to fruit development and environmental conditions are favorable for infection during harvest. Because the pathogen is splashed dispersed, implementing tactics that reduce the amount of water movement and splashing is one of the best means to minimizing disease. Cultural methods that reduce splashing, such as the use of drip irrigation rather than overhead and adding extra layers of straw mulch, are recommended in fields with anthracnose.

Fungicides are only partially effective at stopping an epidemic once the disease is easily noticeable in the field; therefore, fields should be scouted regularly, particularly during fruit set. Quadris 2.08F, Captan 50WP, 80WP, or 80WDG and, possibly, Switch 62.5WG are the most effective fungicides against anthracnose. Optimally, fungicides should be applied to maintain continuous coverage ("calendar applications") or they should be applied before an expected rain event. If applications are planned around rain events, fungicides should be applied to give enough time prior to wetting to allow the fungicide to dry completely on the foliage and fruit; I recommend 3 to 8 hours prior to wetting. Quadris 2.08F (12 fl oz/A) is the most effective fungicide against anthracnose during fruit development and through harvest. Captan is also effective but must be applied on a calendar schedule. Using Captan in this manner will leave a noticeable residue, generally something growers wish to avoid during harvest. Switch 62.5 WG is an excellent gray mold fungicide with some activity against anthracnose. I generally will recommend its use during bloom.

Phytophthora Diseases of Strawberry

Bill Turechek, Dept. of Plant Pathology, Cornell University, Geneva, NY

Last year I encountered a few strawberry fields affected by red stele, caused by *Phytophthora fragariae*, or by Phytophthora crown rot, caused by *Phytophthora cactorum*. The abundance of rain combined with saturated soils this spring has again created conditions favorable for these two diseases. Below is a brief description of both diseases to help growers identify the problem in suspect plantings, followed by control recommendations.

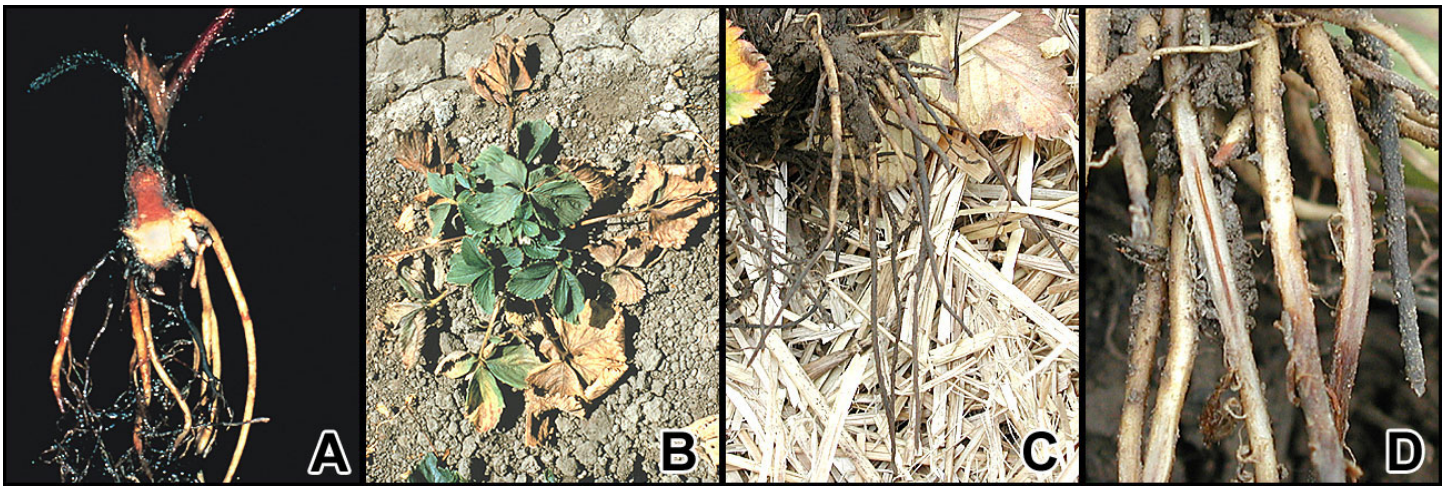
Red stele:

Symptoms: Affected plants appear stunted and off-color and eventually wilt and collapse during periods of rapid growth or when the weather turns warm and dry. Plants are usually affected in clusters within fields, generally in low-lying or wet areas of the field, rather than as isolated plants scattered throughout the planting. Unlike crown rot, the roots of affected plants have a "rat tail" appearance caused by the loss of the fine, branched feeder roots from the main roots (Fig. C). The main roots are generally rotted at the tips back towards the crown and dark lesions are often found along the roots. Scraping away the outer portion of the root just above the rotted portion usually reveals a reddish stripe down the center of the root (i.e., the stele)(Fig. D). This is diagnostic for red stele.

Phytophthora crown rot:

Symptoms: This disease is much less common than red stele in New York. Affected plants are stunted and the leaves appear pale or bluish-green. During periods of rapid growth, during fruit development or as the season becomes warmer and drier, the leaves quickly wilt, turn brown and the entire plant collapses (this is unlike symptoms caused Verticillium wilt where wilting occurs from the outer leaves towards the crown of the plant [Fig. B]). Plants are usually affected in clusters within fields, generally in low-lying or wet areas of the field, rather than as isolated plants scattered throughout the planting. Extensive reddish-brown to brown necrosis of the upper portion of the crown is typical for plants infected recently (Fig. A). This is seen by digging up and cutting the crown in half longitudinally. The main and feeder roots of affected plants tend not to be as discolored or damaged compared to those roots affected by red stele. As the infection

progresses the entire crown rots and decays making diagnosis difficult. This fungus also affects the berries and causes the disease leather rot. Interestingly, the two symptoms may or may not occur together during the same year.



Control:

There a number of varieties that are resistant or have some tolerance to red stele such as Earliglow, Allstar, Northeastern, Mohawk, Tristar, and Sparkle. If a planting was lost due to either of these diseases, strawberries should not be replanted to this site until it has undergone several years of rotation with non-host crops or, if you are gambler, you can try to plant a resistant variety if the site can be improved. In established plantings, excess water should be drained from fields when possible. New plantings should be planted on a well-drained site and/or drainage tiles should be installed if standing water is a recurrent problem. Because splashing water helps to distribute both pathogens, a thick layer of straw mulch is recommended to reduce splashing. This will also protect berries from developing red stele where crown rot is a problem. Also, avoid walking or driving machinery through affected areas and then entering unaffected areas of the planting. The fungi are easily transported on soils stuck to the bottom of shoes or in tractor tires.

Ridomil Gold 4EC (1 pt/treated A) OR Aliette 80WDG (2.5-5 lbs/A) are effective against reducing the severity of these diseases. When infections are mild, it may be possible for plants to recover after chemical treatment. However, these fungicides will not offer very much protection if applied to susceptible varieties planted on a wet site. When treating for either of these two diseases, you need to treat only in and a few rows around the affected area, i.e., you do not need to treat the entire planting. However, the choice to use either of these fungicides at this time of year is difficult one to make. First, the long preharvest interval of both of materials means that any strawberries treated now, can not be harvested and sold. But, if the soils sufficiently dry out and warm up, the fungus becomes inactive and no further infection is likely to occur until autumn. Thus any plants not infected at this point, should not be in danger of infection until fall. In my opinion, unless the soils are clearly saturated or you are dealing with a relatively large area of infection, I would hold off any sprays until after harvest. Lastly, it might be worth making the effort to section off the affected part of the field to limit the movement of invested soil to unaffected parts of your field via the soles of your customer's shoes.

Control of Gray Mold in Brambles

Annemiek Schilder, Dept. of Plant Pathology, Michigan State University, East Lansing, MI

Botrytis gray mold is the most serious and common fruit rot disease of raspberries and blackberries. It is caused by the fungus *Botrytis cinerea*, which also infects numerous other crops, including strawberries, grapes and ornamentals. It is especially severe during prolonged rainy and cloudy periods just before and during harvest. Typically, fall raspberries are more prone to gray mold because of the cool, wet conditions prevailing during fruit development and ripening. Fruit infections also tend to be more severe in the interior parts of the canopy and on fruit clusters close to the ground, due to the higher humidity and reduced airflow.

The fungus overwinters as minute black bodies (sclerotia) in plant debris, including old canes and leaves. In spring, the sclerotia produce large numbers of microscopic spores, which are spread by wind to susceptible plant parts. The spores infect young blossoms, berries, and even leaves and canes when there is sufficient moisture. Only a few hours of moisture, provided by rain, dew, or irrigation water, are needed for infection under optimal conditions (70-80 F). The fungus usually enters the fruit through the flower parts where it remains inactive within the tissues of the infected green fruit. As the fruit matures, the fungus becomes active and rots the fruit.

So while infection occurs at bloom, symptoms are not usually observed until harvest. Symptoms are rapidly enlarging,

light-brown areas on the fruit. Infected berries become covered with gray, dusty growth of the fungus containing millions of spores, hence the name "gray mold." Healthy berries can also become infected by contact with diseased berries. For instance, one sporulating berry in a cluster can infect the entire cluster. Wounds can also predispose berries to infection. Under favorable conditions for disease development, healthy berries may become a rotted mass in 48 hours.

Cultural methods are very important for control of botrytis gray mold. Choosing a site with good airflow can considerably reduce humidity in the canopy. Low-density plantings and narrow rows and trellising can also reduce a buildup of humidity. Good weed control and moderate fertilizer to avoid lush growth are also important. Selecting a resistant cultivar or, at the minimum, avoiding highly susceptible cultivars will help to reduce the need for control measures. During picking, avoid handling infected berries, since spores can be transferred to healthy berries. Timely harvesting and rapid post-harvest cooling can also help to reduce losses to botrytis gray mold.

Several fungicides are labeled for control of *Botrytis* in raspberries. Fungicide sprays during bloom are important to prevent pre-harvest infections, while post-harvest infections can be reduced by sprays closer to harvest. Elevate is a reduced-risk, protectant fungicide with a zero-day PHI that provides good control of pre- and post-harvest gray mold. Since only four applications may be made per season (and only two consecutively) because of the risk of resistance development, Elevate should be alternated with fungicides with a different mode of action. My recommendation is to save Elevate for critical sprays, for example, during wet periods at bloom and for sprays closer to harvest. Other fungicides that may be used in the spray program are Rovral and Switch, both have a zero-day PHI. Some growers have experienced poor control with Rovral, which may indicate that Rovral-resistant *Botrytis* strains are present in their fields. (*Source:* Michigan Fruit Crop Advisory Team Alert, Vol. 8, No. 13, July 9, 2002)

Renovation of Strawberries

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

A common practice following harvest is to “renovate” the beds. Renovation is largely a thinning process to prevent overcrowding caused by the rooting of too many runner plants. It is also an IPM practice that can reduce disease and mite pressure later in the season. Renovation should occur in mid-July, but no later than August 1.

As a first step, many growers apply 2,4-D to kill perennial broadleaf weeds in the row. After several days following the 2,4-D application, leaves are mowed off the plants as a disease prevention measure, to aid in the penetration of miticides, and to allow the application of other herbicides, such as Sinbar, that would otherwise burn the leaves. Leaf removal is not essential, though, and can be detrimental if the root system is unhealthy or if the planting is under water stress. The application of 2,4-D is not essential, particularly if broadleaf weeds are not a problem. Remove leaves close to the crown, being careful not to damage the tops of crowns.

Immediately after mowing, the plant row is narrowed to a 10 to 15 inch width with a disk harrow or rototiller. Since new roots are formed above older roots on the crown, plants also benefit from an inch of soil over top of the crowns when rows are narrowed. Removing the side guards of a tiller is one way to mechanically throw soil over the rows during the narrowing process. However, more than one inch of a soil covering can be detrimental.

Within a day or two of mowing and narrowing, the planting is fertilized. In most cases, it will have been 10 months since the strawberry plants have last received fertilizer, so a majority of fertilizer should be applied at this time. A leaf analysis can be used to determine what later adjustments in fertilizer rates may be necessary. As a rule, growers apply about 60-80 lb/A actual nitrogen at renovation. (Leaf analysis is a valuable tool for fine-tuning fertilizer applications and maximizing crop quality. Collect 50 fully expanded leaves after renovation, usually in mid-August, and send them to Nutrient Analysis Lab, Dept. of Horticulture, Cornell University, Ithaca, NY 14850. Call 607-255-1785 for submission forms.)

As a later step in the renovation process, a preemergent herbicide and/or miticide can be applied. Without leaves to interfere, pesticides can penetrate around the crowns, providing more thorough coverage and effective control. However, these pesticides should be applied within just a few days of leaf removal; otherwise, new leaves will emerge from crowns and these will be extremely sensitive to preemergent herbicides. In addition, once weed seeds germinate, most preemergent herbicides are no longer effective against them.

As a final step, the planting should be irrigated to reduce any stress that may have been imposed from leaf removal, to move fertilizer into the root zone, and to create conditions favorable for new leaf growth. Plantings that undergo intensive renovation are able to remain fruitful and productive for 4 or 5 years.

Arthropod Pest Management Update

Greg English-Loeb, Department of Entomology, Cornell University, Geneva, NY

We are getting to or moving beyond the early season pests (reviewed in the April and May editions of Small Fruit News) into summer time pests. Before highlighting some of the key arthropod pests to be aware of, let me quickly pass on some new information on pesticide registration. There has been a label expansion for the neonicitinoid insecticide imidacloprid (Bayer) to include strawberries, gooseberries, currants and elderberry. This insecticide is particularly effective against sucking insects like aphids, whiteflies, leafhoppers and spittlebugs but also has activity on some beetles and lepidoptera. It comes as a foliar material (Provado 1.6F) or as a systemic insecticide applied through the root system (Admire 2F). Check labels for insect pests included for specific crops.

Blueberries

Cranberry Fruitworm and **Cherry Fruitworm** are the main blueberry arthropod pests in the spring and early summer. These moths overwinter as fully-grown larvae. They pupate in the spring and begin flying in late May and early June (around the time of flowering). Egg laying begins at around petal fall with eggs being placed at the base of newly set fruit. We are probably getting past the optimum time to treat for these pests (petal fall and 10 days later). For sites with moderate pressure, a single insecticide (Confirm or Guthion), timed at 5 days post petal fall, can be effective. Other pests to keep an eye out for at this time are **plum curculio** (notice crescent-shapped scar created from egg-laying on young fruit), leafrollers (larvae make shelters by silking together terminal leaves), and blueberry tip borer (larvae bore into stem causing shoot tips to die back).

There are several summer arthropod pests of blueberries to be on the lookout for as the season progresses. **Blueberry maggot** is probably the most important one, although it has not been as serious a problem in New York as other blueberry producing areas such as New Jersey. The blueberry maggot overwinters in the ground as a pupa (the immature stage before becoming an adult fly). Emergence begins around mid-June and continues through much of the summer. Even though the blueberry maggot only has 1 generation per season, adults appear over an extended time period (emergence is not very synchronized). Indeed, under some environmental conditions, pupae can stay in the soil for 2 or even 3 years before emergence. After emergence, adult females need to feed for 7 to 10 days before they start laying eggs. Eggs are inserted under the skin of ripening berries. Eggs hatch in a few days and the larvae feed and develop for around 20 days before dropping to the ground to pupate. During the early part of larval development there are no obvious external symptoms on the blueberry that it is infested. Later the berry may become soft and appear to ripen early. An important part of controlling blueberry maggot is learning when emergence begins. Yellow sticky cards, baited with a food source for the adult flies (protein hydrolysate and ammonium acetate) can be used to detect the first flies of the season. These traps are commercially available. Place traps along the edge of the planting or in woods near wild blueberries to better estimate when activity begins. For problem fields, regular applications of pesticides, beginning after activity is detected and continuing until harvest, is necessary to adequately protect fruit.

Adult **Japanese beetles** can also present problems for blueberry growers during the summer, although this is less true for U-pick operations. The adults emerge at the end of June and into July and feed both on blueberry foliage and to some extent on fruit. The damage appears as skeletonized leaves or surface scarring of the fruit. During harvest beetles can also be dislodged from the plant and contaminate the packed berries. Several insecticides are available that provide moderate to good control of Japanese beetles. Note, though, that beetles are very mobile and will fly into fields from long distances.

Raspberries

We covered most of the relevant arthropod pests of raspberries in the last edition of the New York Berry News. **Tarnished plant bug** and **cane borers** continue to be a threat into the summer; tarnished plant bug nymphs and adults feed on developing fruit and cane borer larvae feed inside canes.

Potato leafhoppers (both adults and immatures) are also showing up in New York farms. This species overwinters as adults in the southeastern USA and then migrates north in spring and early summer. They feed on a lot of different crops including many small fruits like strawberries, raspberries, and grapes. They use their soda-straw like mouthparts to pierce the water conducting vessels of the plant (xylem) and such out water and nutrients. If this is all they did, it probably would not cause much problem. But they also inject saliva into the plant and for some species this causes a strong reaction in the plant. Typical symptoms include yellowing of leaf margins and distorted and possibly stunted leaves. Different plant species respond differently and some are very sensitive while others are not. Raspberries, grapes, and strawberries are pretty sensitive. The adult potato leafhopper is iridescent green and wedge-shaped while the nymph is usually green and moves sideways in a unique manner when disturbed. If injury to foliage is moderate to severe, control may be necessary. Sevin [carbaryl] and Malathion 57 EC are labeled for potato leafhopper on raspberries but note there is a 7 days to harvest restriction for Sevin but only a 1 day restriction for Malathion.

I should also mention **two-spotted spider mite** (TSSM) as a potential pest. These tiny spider-like arthropods can become very numerous on foliage, causing white stippling on leaves. They seem to be most problematic in dry sites and/or in mild growing areas such as the Hudson Valley and Long Island. As of a few years ago there is now a miticide registered in New York for control of TSSM (Savey WP). Predatory mites can also provide control of TSSM. These beneficial mites are frequently naturally present in raspberry fields, especially where few broad-spectrum insecticides are used, but can also be purchased from a supply house. For both Savey and predatory mites, it's important to start control actions early before you see lots of severe injury to foliage (bronzing).

As fruit ripens **picnic beetles** can become a problem. The adult beetles are attracted to damaged or over ripe fruit where they feed and also may spread fruit rots. **Japanese beetles** can also cause injury to raspberry foliage and fruit during July and early August. August is the time that the adult **raspberry crown borer** makes its appearance. The adult is a very attractive moth that superficially resembles a yellow jacket. You may notice the adults resting on foliage during the day. It's the larvae, though, that cause the major problem. Reddish-brown eggs are placed on foliage in August and September. After hatching the larvae find a protected place near the base of the cane to spend the winter. The next spring the larvae enter the crown and roots where they spend the next year. In the second year the larvae continue to feed until early summer, at which time they form pupae and then emerge as adults in late summer to start the cycle over again. During the growing season look for withering, wilting and dying canes, often with half-grown fruit. Destroying these canes (including the crown area) may help reduce crown borer populations. Guthion is currently labeled for control of crown borer on raspberries (applied to control larvae in spring) but that this registration will be lost next year. [If you think you have a problem with raspberry crown borer, let me know (gme1@cornell.edu or 315-787-2345). There is a student at University of Arkansas working on this pest and who is interested in getting specimens for our area.]

Strawberries

Flowering is pretty much complete and fruit is quickly ripening (we harvested our first Earliglow from research plots on June 4). For later maturing cultivars **tarnished plant bug** (TPB) can still cause injury to fruit so keep on monitoring for nymphs (see article in May issue of Small Fruit News). For day-neutral cultivars, TPB becomes an increasing problem for the August harvest.

Spittlebug can still be a problem leading up to harvest. You can see the frothy spittle on leaves, stems, and flowering racemes starting about bloom and extending into harvest. They overwinter as eggs in the soil and hatch out as temperatures rise in the spring. The nymphs crawl up the plant and begin feeding on the xylem tissue (the water conducting vessels of the plant). There are not a lot of nutrients in xylem and therefore nymphs need to process a lot of sap, extracting the few nutrients out for their use and excreting the remaining water. This water is frothed into white spittle, which helps protect the nymphs from desiccation and natural enemies. Feeding by spittlebugs, if extensive, can stunt plants and reduce berry size. Perhaps more importantly, the spittle masses are a nuisance to pickers. Threshold for spittlebug masses is 1 mass per foot row.

As fruit ripens **strawberry sap beetles** will become more active. Recent research indicates that the adult beetles spend the winter in surrounding woods and then move into strawberry fields as fruit begins to ripen. Look for evidence of feeding damage on the underside of ripe fruit that is touching the ground (small shot holes; you usually don't see the beetle itself). Both the adult beetles and the larvae feed on ripe and overripe fruit. We still are exploring the best ways to control SSB. Two pyrethroids are labeled in New York for its control: Dantitol and Brigade. Note that Brigade does not have a preharvest interval while for Danitol it is 2 days. For both materials, good coverage is likely to be important for its control.

It is also worth mentioning **root weevil** at this time. The larvae have been busy feeding on roots and crowns since last summer and are getting close to completing development and pupating to adults. If you have questions about whether you have root weevils, this is a good time to look since the larvae will be large and easy to see. Dig out the crown and roots of a couple of plants in different sections (especially look near weak-looking sections) and sift through the soil for small (eighth to quarter inch), legless, C-shaped, pale white grubs. After emerging around harvest time, the adults feed for a few days before starting to lay eggs. Chemical control (Brigade) is targeted at the adults. Look for characteristic adult feeding damage on leaves (notching from the edge) to help determine timing. Some growers have also had success controlling root weevil larvae using parasitic nematodes. These can be applied either in the spring (late April and early May) and/or in the fall. Use sufficient water to get good penetration. Rotation out of strawberries is the best remedy for root weevils.

Currants and Gooseberries

Imported Currant Worm (ICW) has completed its first generation and is getting started on the second. Larvae are greenish in color with yellowish ends, a black head region, and covered with black spots. Full-grown, they can get to be close to 3 inches long. They initially feed in colonies but as they become larger, feed singly. Malathion is labeled for use

against ICW. Other currant and gooseberry pests to be on the look out for in the spring and early summer include the **currant borer** and **gooseberry fruitworm**. The currant borer, as an adult, is an attractive moth with clear wings, blue-black body with yellow markings resembling a wasp. The adult emerges in the spring, mates and begins laying brownish eggs on the bark of canes. After hatching, larvae burrow into canes and begin feeding within the pith. No insecticides are labeled for currant borer although removal of weak canes in the spring and fall will help keep populations down. The gooseberry fruitworm is also in the moth group. Larvae feed inside young fruit, sometimes weaving portions of stems together with silk. Finally, **twospotted spider mite** also feeds on currants and gooseberries and in some years, can cause considerable damage. Look on the underside of leaves for the mites and their webbing. Keep an eye out for reduced plant vigor, bronzing of foliage, and webbing on leaves and shoot tips.

Check out the NYSAES Tree Fruit and Berry Pathology web site at:

www.nysaes.cornell.edu/pp/extension/tfabp

Questions or Comments about the New York Berry News?

Send inquiries to:

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WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, MAY 16th, 2004

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	*Low*	*Avg*	*DFN*[1]	*Week*	*YTD*[2]	*DFN*	*Week*	*DFN*	*YTD*	*DFN*
Hudson Valley											
Albany	86	43	68	11	126	287	152	0.61	-0.16	4.29	-0.42
Glens Falls	85	41	65	11	107	227	126	2.01	1.17	5.19	0.37
Poughkeepsie	89	45	69	12	137	308	143	0.72	-0.26	5.51	-0.24
Mohawk Valley											
Utica	85	47	66	11	116	240	118	0.95	0.13	5.99	0.58
Champlain Valley											
Plattsburgh	81	39	63	8	92	199	97	0.51	-0.12	3.88	-0.37
St. Lawrence Valley											
Canton	86	43	64	11	102	196	110	0.56	-0.07	4.12	-0.24
Massena	87	42	64	10	97	202	104	0.18	-0.38	3.7	-0.23
Great Lakes											
Buffalo	85	47	66	11	111	234	109	0.4	-0.3	5.43	0.98
Colden	84	47	66	13	111	204	116	0.95	0.18	7.19	1.62
Niagara Falls	85	42	65	9	106	217	80	0.26	-0.37	5.36	0.72
Rochester	85	46	67	11	120	253	110	0.75	0.15	5	1.02
Watertown	82	41	63	10	93	195	105	0.2	-0.41	4.07	0.21
Central Lakes											
Dansville	85	48	67	11	117	224	95	1.1	0.47	7.39	3.13
Geneva	86	47	67	12	119	233	114	0.67	0.04	6.52	2.13
Honeoye	86	48	67	12	122	250	128	0.5	-0.11	6.16	1.79
Ithaca	85	49	68	14	128	250	149	1.06	0.33	6.97	2.42
Penn Yan	84	51	68	13	127	274	155	1.07	0.44	7.31	2.92
Syracuse	86	50	68	12	130	275	134	1.44	0.74	6.9	1.92
Warsaw	82	43	66	14	113	206	131	0.48	-0.29	7.06	1.92
Western Plateau											
Alfred	85	49	67	13	121	235	146	1.18	0.44	7.76	3.02
Elmira	85	47	67	12	118	268	156	1.19	0.49	6.84	2.56
Franklinville	82	47	65	14	106	200	143	1.18	0.41	6.73	1.68
Sinclairville	84	46	66	14	112	215	138	1.03	0.18	7.2	1.43
Eastern Plateau											
Binghamton	82	48	67	13	123	252	145	0.74	-0.03	5.71	0.86
Cobleskill	82	44	65	11	106	218	125	1.19	0.38	5.4	0.3
Morrisville	81	45	64	11	101	168	81	0.98	0.14	6.42	1.47
Norwich	86	48	66	12	112	223	126	0.95	0.11	6.71	1.43
Oneonta	85	45	66	14	116	258	176	1.59	0.61	6.95	1.24
Coastal											
Bridgehampton	79	44	62	7	85	162	59	0.11	-0.73	10.39	4.42
New York	89	53	68	8	129	357	110	1.99	1.15	7.46	1.65

1. *D*eparture *F*rom *N*ormal
2. *Y*ear *T*o *D*ate: Season accumulations are for April 1st to date

The information contained in these weekly releases are obtained from the New York Agricultural Statistics Service (http://www.nass.usda.gov/ny/), who in turn obtains information from reports from Cornell Cooperative Extension agents, USDA Farm Service Agency, Agricultural Weather Information Service Inc., the National Weather Service and other knowledgeable persons associated with New York agriculture.

WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, MAY 23rd, 2004

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	***Low***	***Avg***	***DFN[1]***	***Week***	***YTD[2]***	***DFN***	***Week***	***DFN***	***YTD***	***DFN***
Hudson Valley											
Albany	79	44	64	5	102	389	188	0.22	-0.55	4.51	-0.97
Glens Falls	79	38	61	4	78	305	150	0.87	0.03	6.06	0.4
Poughkeepsie	81	48	67	8	121	424	187	0.34	-0.64	5.85	-0.88
Mohawk Valley											
Utica	80	40	63	6	94	334	155	1.32	0.48	7.31	1.06
Champlain Valley											
Plattsburgh	75	40	60	3	68	267	111	1.56	0.92	5.44	0.55
St. Lawrence Valley											
Canton	78	40	59	3	65	261	129	1.68	0.99	5.8	0.75
Massena	78	39	59	3	64	266	116	2.3	1.74	6	1.51
Great Lakes											
Buffalo	79	46	64	6	97	331	145	1.39	0.69	6.82	1.67
Colden	79	43	61	6	81	285	151	1.78	0.96	8.97	2.58
Niagara Falls	78	42	62	4	88	305	104	0.86	0.2	6.22	0.92
Rochester	80	44	62	4	83	336	129	0.67	0.04	5.67	1.06
Watertown	78	35	59	4	67	262	126	0.96	0.33	5.03	0.54
Central Lakes											
Dansville	80	44	62	4	84	308	119	1.41	0.76	8.8	3.89
Geneva	79	44	61	4	79	312	134	0.79	0.1	7.31	2.23
Honeoye	82	42	62	4	84	334	152	1.68	1.05	7.84	2.84
Ithaca	79	41	62	6	88	338	185	0.92	0.15	7.89	2.57
Penn Yan	80	45	63	6	92	366	188	0.72	0.03	8.03	2.95
Syracuse	80	43	65	6	104	379	172	0.64	-0.11	7.54	1.81
Warsaw	77	43	61	7	78	284	166	2.27	1.48	9.33	3.4
Western Plateau											
Alfred	80	44	62	7	86	321	184	1.59	0.8	9.35	3.82
Elmira	80	40	64	7	96	364	195	0.69	-0.05	7.53	2.51
Franklinville	79	41	60	7	72	272	180	1.47	0.67	8.2	2.35
Sinclairville	79	43	62	8	87	302	183	2.4	1.49	9.6	2.92
Eastern Plateau											
Binghamton	76	44	64	7	97	349	188	0.65	-0.12	6.36	0.74
Cobleskill	78	43	61	5	81	299	157	1.17	0.33	6.57	0.63
Morrisville	76	40	60	5	73	241	108	0.75	-0.1	7.17	1.37
Norwich	80	41	62	6	83	306	159	0.62	-0.22	7.33	1.21
Oneonta	82	43	64	10	101	359	232	1	0.02	7.95	1.26
Coastal											
Bridgehampton	75	43	60	3	74	236	78	0.2	-0.64	10.59	3.78
New York	84	56	68	6	129	486	144	0.21	-0.63	7.67	1.02

1. *D*eparture *F*rom *N*ormal
2. *Y*ear *T*o *D*ate: 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, MAY 30th, 2004

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	*Low*	*Avg*	*DFN*[1]	*Week*	*YTD*[2]	*DFN*	*Week*	*DFN*	*YTD*	*DFN*
Hudson Valley											
Albany	81	46	64	3	101	490	208	2.1	1.27	6.61	0.3
Glens Falls	75	36	60	2	75	380	157	1.88	1.06	7.94	1.46
Poughkeepsie	88	41	63	1	93	517	194	1.23	0.25	7.08	-0.63
Mohawk Valley											
Utica	78	39	60	0	70	404	154	3.88	3.01	11.19	4.07
Champlain Valley											
Plattsburgh	72	39	56	-5	45	312	87	1.61	0.91	7.05	1.46
St. Lawrence Valley											
Canton	71	33	54	-5	34	295	104	1.52	0.82	7.32	1.57
Massena	71	34	55	-5	39	305	91	1.22	0.61	7.22	2.12
Great Lakes											
Buffalo	74	40	58	-3	61	392	131	2.04	1.27	8.86	2.94
Colden	76	37	59	1	63	348	155	1.86	0.99	10.83	3.57
Niagara Falls	75	39	58	-4	55	360	82	1.32	0.61	7.54	1.53
Rochester	77	40	58	-3	60	396	115	1.98	1.34	7.65	2.4
Watertown	72	33	56	-3	44	306	111	1.19	0.56	6.22	1.1
Central Lakes											
Dansville	79	37	60	-1	71	379	116	1.83	1.1	10.63	4.99
Geneva	81	39	60	-1	69	381	131	2.1	1.35	9.41	3.58
Honeoye	80	36	59	-2	66	400	143	2.86	2.14	10.7	4.98
Ithaca	82	36	61	3	81	419	201	2.53	1.72	10.42	4.29
Penn Yan	81	41	61	1	77	443	193	1.55	0.8	9.58	3.75
Syracuse	82	40	61	1	83	462	178	3.73	2.96	11.27	4.77
Warsaw	77	35	57	-1	55	339	167	2.49	1.62	11.82	5.02
Western Plateau											
Alfred	79	37	61	3	75	396	199	1.66	0.78	11.01	4.6
Elmira	83	35	63	4	92	456	218	0.89	0.1	8.42	2.61
Franklinville	77	33	58	3	64	336	198	2.76	1.89	10.96	4.24
Sinclairville	78	37	59	3	67	369	196	1.66	0.7	11.26	3.62
Eastern Plateau											
Binghamton	80	39	62	3	86	435	207	1.81	1.04	8.17	1.78
Cobleskill	79	39	61	3	80	379	175	2.38	1.48	8.95	2.11
Morrisville	77	35	57	-2	54	295	103	1.97	1.06	9.14	2.43
Norwich	83	38	62	4	89	395	187	1.78	0.88	9.11	2.09
Oneonta	79	38	62	6	88	447	264	2.47	1.47	10.42	2.73
Coastal											
Bridgehampton	72	45	57	-4	54	290	62	1.22	0.37	11.81	4.15
New York	88	54	65	-2	106	592	140	1.35	0.51	9.02	1.53

1. *D*eparture *F*rom *N*ormal
2. *Y*ear *T*o *D*ate: 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 6th, 2004

	Temperature				Growing Degree Days (*Base 50*)			Precipitation (*inches*)			
	High	***Low***	***Avg***	***DFN[1]***	***Week***	***YTD[2]***	***DFN***	***Week***	***DFN***	***YTD***	***DFN***
Hudson Valley											
Albany	73	44	61	-3	78	568	190	0.8	-0.04	7.41	0.26
Glens Falls	74	35	58	-5	55	435	130	0.65	-0.13	8.59	1.33
Poughkeepsie	78	43	60	-5	71	588	164	1.56	0.64	8.64	0.01
Mohawk Valley											
Utica	72	38	57	-5	53	457	124	0.61	-0.3	11.8	3.77
Champlain Valley											
Plattsburgh	75	38	57	-6	49	361	52	1.62	0.92	8.67	2.38
St. Lawrence Valley											
Canton	76	38	58	-3	55	350	86	0.7	-0.05	8.02	1.52
Massena	75	39	58	-4	54	359	68	0.6	-0.08	7.82	2.04
Great Lakes											
Buffalo	70	43	60	-4	70	462	111	0.85	0.01	9.71	2.95
Colden	71	41	57	-3	53	401	137	0.88	-0.07	11.71	3.5
Niagara Falls	71	44	59	-5	61	421	52	0.78	0.01	8.32	1.54
Rochester	72	42	58	-5	60	456	88	0.53	-0.17	8.18	2.23
Watertown	74	36	57	-3	51	357	91	0.39	-0.28	6.61	0.82
Central Lakes											
Dansville	72	40	57	-6	51	430	79	0.93	0.07	11.56	5.06
Geneva	75	44	59	-5	62	443	107	0.5	-0.32	9.91	3.26
Honeoye	75	37	58	-5	58	458	112	0.55	-0.27	11.25	4.71
Ithaca	75	39	58	-4	55	474	178	1.07	0.23	11.49	4.52
Penn Yan	74	41	58	-5	59	502	166	0.65	-0.17	10.23	3.58
Syracuse	73	42	59	-5	63	525	153	1.17	0.34	12.44	5.11
Warsaw	69	39	57	-3	48	387	149	0.79	-0.17	12.61	4.85
Western Plateau											
Alfred	72	41	57	-4	54	450	180	1	0.01	12.01	4.61
Elmira	72	37	57	-6	50	506	185	1.54	0.7	9.96	3.31
Franklinville	72	37	56	-3	40	376	179	1.13	0.17	12.09	4.41
Sinclairville	72	41	58	-2	56	425	185	0.84	-0.19	12.1	3.43
Eastern Plateau											
Binghamton	70	41	56	-6	45	480	172	0.83	-0.01	9	1.77
Cobleskill	71	39	57	-5	48	427	149	0.97	-0.01	9.92	2.1
Morrisville	69	39	55	-6	34	329	68	0.48	-0.45	9.62	1.98
Norwich	72	39	57	-4	50	445	163	1.12	0.18	10.23	2.27
Oneonta	74	42	58	-2	58	505	255	1.08	0.1	11.5	2.83
Coastal											
Bridgehampton	73	47	59	-4	65	355	41	0.5	-0.38	12.31	3.77
New York	84	56	66	-3	112	704	126	0.48	-0.36	9.5	1.17

1. *D*eparture *F*rom *N*ormal
2. *Y*ear *T*o *D*ate: Season accumulations are for April 1st to date

The information contained in these weekly releases are obtained from the New York Agricultural Statistics Service (http://www.nass.usda.gov/ny/), who in turn obtains information from reports from Cornell Cooperative Extension agents, USDA Farm Service Agency, Agricultural Weather Information Service Inc., the National Weather Service and other knowledgeable persons associated with New York agriculture.