The New York Berry News

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What's Inside

Currant Events: Strawberry harvest will be in full swing beginning the week of June 16th. Many strawberry growers have been pleasantly surprised with the size of their crop, alleviating fears of heavy losses due to the spring time frosts we experienced around bloom. However, heavy rains throughout bloom and leading up to harvest has created conditions favorable for both gray mold and anthracnose. Strategies for managing both gray mold and the various berry rots was presented in an article written by Mike Ellis of The Ohio State University in the last issue of the NY Berry News, and I encourage you to read through the article once again.

In this issue, Greg English-Loeb covers the insect pests we need to be on the lookout for across most of the berry crops grown in New York. I also cover managing diseases of currant and gooseberry. It is also the time of year when we should be thinking about managing foliar diseases of strawberry (this includes anthracnose as well!). Under normal conditions, managing these disease can wait until after renovation, but under certain circumstances, fungicide applications may be needed sooner as discussed in the article below.

Soon after harvest we need to think about renovation. A series of articles dealing with renovation practices, including weed management, are covered in detail in this issue.

Good luck with your harvest and we hope to see many of you at the twilight meeting on June 25th.

Small Fruits Twilight Meeting: Agenda and Contact Info.

This is the last reminder for the Small Fruits Twilight Meeting scheduled for June 25, 2002 at the Cornell University's New York State Agricultural Experiment Station at Geneva. If you haven't done so yet, **please register by contacting Kathleen Morabito at (315) 787-2234 or at kmm64@cornell.edu.** There is no charge for attending. The following is the agenda for the Small Fruits Twilight Meeting.

5:30pm	Registration begins
6:00	Introductions
6:05	Strawberry variety trial- Dr. Courtney Weber
6:35	Strawberry pest management- Dr. Bill Turechek, Dr. Greg English-Loeb, and Dr. Marvin Pritts
7:05	Early raspberry varieties- Dr. Courtney Weber
7:20	Raspberry pest management- Dr. Bill Turechek, Dr. Greg English-Loeb, and Dr. Marvin Pritts
7:50	Other small fruits research, grower questions, and open discussion

The meeting will be held at the experiment station's Darrow Farm on Gates Road. Gates Road is approximately 3 miles west of the experiment station off of County Road 4 (this is North Street in Geneva which runs between Hedrick Hall and Jordan Hall heading west out of Geneva). The Darrow farm is approximately 1 mile south of County Road 4 on Gates Road. Signs will be posted. For more information contact Dr. Weber at caw34@nysaes.cornell.edu or at (315) 787-2395.

'Carmine' Strawberry

Craig Chandler and Dan Legard, Dept. of Plant Pathology, University of Florida, Dover, FL

On April 9th the University of Florida released the strawberry cultivar 'Carmine'. 'Carmine' is an early ripening berry intended to replace or be an alternative to 'Sweet Charlie'. 'Sweet Charlie' has benefitted the Florida strawberry industry through its high production of fruit early in the season, when market prices are typically high. But the texture of 'Sweet Charlie' fruit is relatively soft, making its shipment and shelf life problematic. 'Carmine' has produced high early-season (Dec. through Feb.) yields of firm, deep red fruit at GCREC-Dover and in several commercial fields in west-central Florida.

Summer Arthropod Pest Management

Greg English-Loeb, Dept. of Entomology, Cornell University, Geneva, NY

— Strawberry —

Harvest is around the corner for many June-bearing strawberries. For later maturing cultivars tarnished plant bug (TPB) can still cause injury to fruit so keep on monitoring for nymphs (Figure 1). For day-neutral cultivars, TPB becomes an increasing problem for the August harvest. As fruit ripens strawberry sap beetles will become more active. If you have had a problem with this pest in the recent past, it is likely it is still with you. 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). If you decide to apply an insecticide for sap beetle, remember that good coverage is likely to be important for its control. Finally, after renovation is a good time to treat for cyclamen mite if this mite pest has been a problem for you. Use lots of water.

Figure 1. Tarnished plant bug nymph on blossom

Garden slugs can also be problematic this time of year. Slugs feed on ripening fruit, leaving noticeable holes in the berries. Slugs are a particularly a problem during wet weather and in heavily mulched fields. Eliminating mulch will reduce the population of slugs, but this practice is not recommended as it will contribute to the rapid development of several serious berry rots. Metaldehyde bait (e.g., Deadline M-Ps @ 10-140 lb/A) will attract and poison slugs. Applications in mid-September will reduce egg-laying and an application around harvest will target the new generation. Beer traps, for example shallow pans filled Piels, Milwaukee's Best, or Keystone Light, set under slightly propped asphalt shingles, will also attract slugs. These are apparently as effective at reducing the damage by slugs as some of the commercially available products.

— Raspberry —

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. 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 may help reduce crown borer populations. Note that no insecticides are currently registered in New York for control of crown borer.

— Blueberry —

There are several summer arthropod pests of blueberries to be on the lookout for. Blueberry maggot (Figure 2) 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

Figure 2. Blueberry maggot

(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 (Figure 3) 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.

Figure 3. Japanese beetles and their feeding damage (on strawberry).

— Currant & Gooseberry —

Last year I noticed a fair amount of foliar damage from two-spotted spider mite on currants during the summer. Mites may not be such a problem this year, but keep an eye out for reduced plant vigor, bronzing of foliage, and webbing on leaves and shoot tips.

Summer Management of Foliar Diseases of Strawberry

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

Last month's edition of the New York Berry News covered fungicidal tactics for managing the common berry rot diseases in New York. In this issue we will cover foliar disease management. Foliar diseases are often overlooked because most do not become noticeable until after harvest or renovation. However, serious outbreaks of any of the diseases discussed below can seriously impact the vigor, winter hardiness, and even the production of a planting. Even one well-timed application in the summer months may be all that is needed to keep disease from reaching levels that may impact production.

Leaf spot is caused by the fungus *Mycosphaerella fragariae*. It is one of the most common and widespread diseases of cultivated strawberry. It is also the cause of black seed; a disease of the fruit that can occur when warm and wet conditions occur during bloom. Prior to the development of resistant cultivars, leaf spot was the most economically important disease of strawberry. However, since many commercially grown cultivars are not completely resistant to leaf spot, this disease is still significant on a number of cultivars including 'Honeoye', 'Raritan', and 'Kent'.

Figure 4. Leaf spot symptoms

Leaf scorch is caused by the fungus *Diplocarpon earlianum*. It is a common disease of strawberry in Ontario, Canada and throughout the northeast. Epidemics occur normally from August to October. Leaf scorch can markedly reduce vegetative growth, weakening plants and resulting in a sharp reduction of growth of shoots and roots, a reduction in the number and vigor of crowns, and quite possibly fruit yield. Severely infected plants may die from environmental stresses, such as heat, cold or drought. Losses range from negligible to severe, depending primarily on cultivar susceptibility

Figure 5. Leaf scorch symptoms

and weather conditions.

Leaf blight is caused by the fungus *Phomopsis obscurans*. The disease affects primarily older foliage in late summer and, like leaf scorch can result in reduced plant vigor and yield in the following season. (It also can cause severe defoliation in nursery production areas in the southeastern US.) Leaf blight is particularly destructive to slow-growing or weak plants. It seldom damages young, runner plants, and rarely attacks the fruit in the Northeast. The spread of *P. obscurans* is favored by frequent rains, overhead irrigation, and heavy dews. Little spread occurs during hot, dry weather in the summer, although symptoms may continue to develop during this period.

Figure 6. Leaf blight symptoms

Powdery mildew is caused by the fungus *Spaerotheca macularis*. Disease severity is most pronounced in areas that experience high humidity and moderate temperatures through the growing season, such as the coastal and Great Lakes regions of the US. Like most of the foliar diseases mentioned, severe outbreaks of powdery mildew can weaken plants leading to an increase in winter-injury and a reduction in yield.

Figure 7. Powdery mildew symptoms on underside of leaf. Fruiting bodies of the fungus can be seen towards the end of the summer (right picture).

Anthracnose is caused by the fungus *Colletotrichum acutatum* (see article below). The disease is a notorious fruit rotter. However, the fungus also attacks the leaves and petioles of the plant which allows the disease to survive from season to season within a field (see Figure 9c,d). Major losses can occur during the establishment year if developing runners are attacked and girdled, killing the daughter plants and not permitting row spaces to be filled.

Angular leaf spot is caused by the bacterium *Xanthomonas campestris pv. fragariae*. In New York, the disease is not as widespread as those diseases addressed so far. The disease severely affects the foliage, but it does not readily attack the fruit or crown of the plant under New York conditions. Because there are no real control options, the disease is often left uncontrolled and, seemingly, has little impact on the planting the following year.

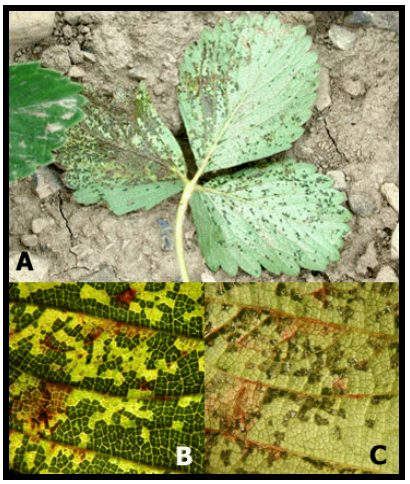

Figure 8. (A) Symptoms of angular leaf spot on the underside of a leaf; (B) as they appear under transmitted light, i.e., leaf held towards the sky; and (C) from reflected light, i.e., leaf looked at from above.

Management of foliar diseases: As we are just beginning harvest, it can be difficult to coordinate fungicide applications among picking schedules and weather. Fortunately, fungicides are typically unnecessary during harvest unless anthracnose is a problem. Furthermore, fungicides are only necessary after harvest if foliar diseases have been a problem in previous years and/or conditions favor disease development. We are, however, experiencing a very wet spring so it is likely that we will have to contend with some disease during and/or after harvest.

In fields where anthracnose is a problem, Benlate 50WP (0.5 -1 lb/A) or Topsin-M WSB (0.75-1 lb/A) PLUS Captan 50WP (3-6 lb/A) or 80WP (2.75-3.75 lb/A) should be used for control of leaf diseases. This tank-mix will also have some efficacy against anthracnose fruit rot. Benlate, however, can not be applied once a U-pick operation has opened for business and Topsin-M has a 1 day pre-harvest interval. Moreover, the wettable powder formulations of captan can leave a noticeable residue on plants. To reduce residues, it is best to use the flowable formulation Captec 4L (3qt/A) if treatment is necessary. (Note: captan can be used up to the day of harvest, but has a 24 hr reentry interval.)

When anthracnose is problem, it will be important to follow-up with fungicide treatment (Captan) after harvest and renovation. The fungus is capable of attacking the petioles of young leaves as they emerge after renovation. Furthermore, the pathogen has been shown to survive on the surface of strawberry leaves without causing disease symptoms. Fungicide applications at this time serve to reduce the pathogen

population that may overwinter and cause outbreaks next season.

It is worth mentioning that we were expecting the fungicide Quadris to be registered in New York by now. Quadris has been shown in many university trials to be a superior anthracnose material. Unfortunately, the NY DEC was unable to register this product before we need it, so New York growers will have to make due without this fungicide.

If anthracnose is not a problem, managing foliar diseases becomes much easier. Nova 40W (2.5-5 oz/A) is labeled in New York for control of leaf spot, leaf blight, and powdery mildew and is the most effective fungicide against these diseases. I have not seen any data to support its efficacy against leaf scorch. Applications should begin when disease appears and continue on a 14 to 21 day schedule or when conditions favor disease development. Often, the first application can wait until after harvest. If disease pressure is serious, applications can begin earlier and continue up to the day of harvest. If repeated applications are necessary, it is recommended that Nova 40W be alternated with a tank mix of Benlate and Captan for resistance management.

Fixed copper products are the only real option for managing angular leaf spot. Copper can be applied on 14-21 day schedule, but growers should be aware that as few as 3 successive applications of copper can result in phytotoxicity on some varieties, quite possibly doing more damage than disease itself. The collective experience of many small fruit pathologists in the Northeast is that treatment is often not necessary, as this disease can appear in epidemic from one year but often not the next.

Lastly, a number of cultural practices can be used to help manage disease. New plantings should be established in sites with light, well-drained soil, with good air circulation and full exposure to the sun. In matted-row systems, runner plants should be carefully spaced when filling rows and the entire planting should be kept free of weeds to improve air circulation and reduce drying time for leaves. Removing and burning all debris at renovation (after harvest) helps to reduce overwintering inoculum of all leaf pathogens.

Strawberry Anthracnose

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

Anthracnose is a serious disease of strawberry that can affect foliage, runners, crowns and, most importantly, the fruit. In the Northeast, the disease is caused by the fungal pathogen *Colletotrichum acutatum* and it is most likely introduced into plantings on infected plants. Anthracnose is considered to be a warm-weather disease with an optimum temperature for disease development near 80 F. Therefore, 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 germinate and infect, and splashing water to be dispersed. For these reasons, anthracnose is most commonly observed in day-neutral plantings grown on plastic. Once the disease is established in the field, the fungus overwinters on infected plant debris and mummified fruit. Anthracnose may become a problem in subsequent years if the weather is warm and wet.

Symptoms. The pathogen attacks the fruit, runners, petioles, and (supposedly) the crown of the plant; 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 (Figure 9d). 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. This is known as black spot (Figure 9a). After several days, lesions may be covered with salmon-colored spore masses (figure 9b). 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 (Figure 9E)). Crown tissue may be uniformly discolored or streaked with brown, and lesions also may produce salmon-colored masses of spores.

Disease management. Anthracnose fruit rot is very difficult to control when environmental conditions are favorable for infection during harvest. Therefore, control measures must begin early in the season. However, it is very difficult to detect the fungus in planting material because it causes latent (invisible) infections and petiole lesions can be quite inconspicuous. Fungicides are only partially effective once the epidemic has become noticeable in the field. Benomyl and captan are labeled for use on strawberries and have shown efficacy against anthracnose. In commercial operations, pesticides should be applied before an expected rain event and in nursery operations when varieties begin to fruit. The following rates are recommended for disease control: Benomyl @ 1 lb/A + Captan 50WP @ 4-6 lb/A (or Captan 80WP @ 3.75 lb/A). Do not apply in combination with, immediately before, or closely following oil sprays. This includes many oil-based adjuvants that are mixed with common herbicides. Apply all materials in 200 gal water/acre to ensure adequate coverage.

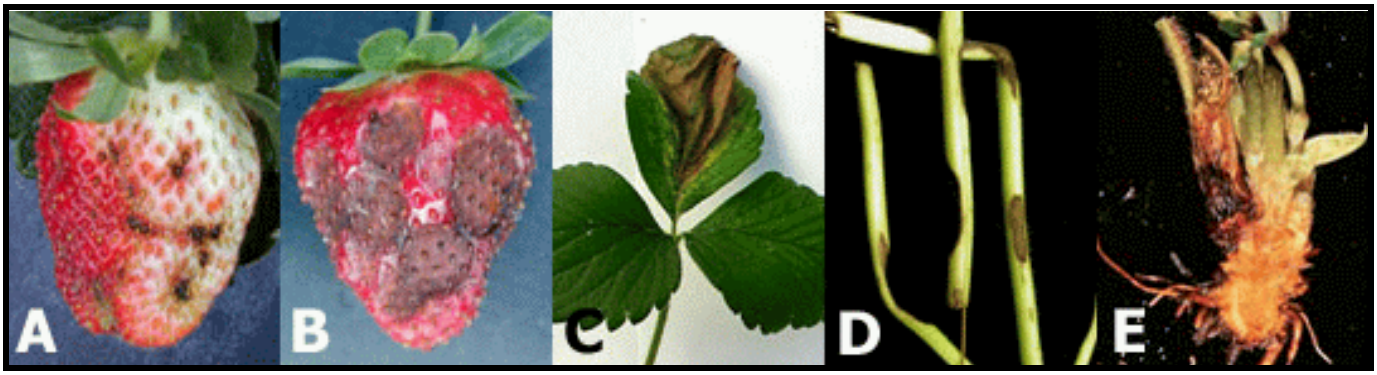

Figure 9. (A) Early ("black spot") symptom of anthracnose on ripening fruit; (B) fully developed lesions on mature fruit; (C) typical leaf lesion of anthracnose; (D) typical petiole lestion; and (E) crown rot symptom (not common in New York).

The best way to avoid the disease is to begin with clean nursery stock. Inspect plants for the disease before planting. Particularly, inspect the petioles for lesions characteristic of those shown in Figure 9D. If you suspect the disease may in your field once the plants are established, it is highly recommended that you minimize the amount of splashing/water movement since the pathogen is splashed dispersed. Cultural methods that reduce splashing, such as drip irrigation rather than overhead, and mulching with straw, are highly recommended. In fields with anthracnose, additional straw mulch can help reduce the spread of the disease.

Diseases Management of Currant and Gooseberry

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

The production of Ribes (gooseberry and currants) is expanding rapidly in the Northeast, especially for fresh consumption, and efforts are underway to develop an extensive processing industry. A few diseases have begun to appear in established plantings as well as in newer plantings. Leaf spot, also known as anthracnose (*Drepanopeziza ribis*), has been devastating on gooseberry, red currant, and to a lesser extent, black currant. White pine blister rust (*Cronartium ribicola*) is a major disease problem on susceptible black currant varieties such as 'Ben Alder' and 'Ben Nevis'. In severe cases, 'Ben Alder' has been completely defoliated by August leading to winter-killed bushes due to lack of hardening. Powdery or American mildew (*Spherotheca mors-uvae*) is a disease that must be controlled every year if resistant varieties are not used.

In New York, the only fungicides labeled for use on currant and gooseberry are myclobutanil (Nova), benomyl (Benlate), iprodione (Rovral), copper hydroxide (e.g., Kocide), mineral oil (e.g., Stylet Oil), and sulfur. Currently, we have little experience with how well some of these products will work against these diseases under New York conditions. Therefore, I will draw upon experience of how well these fungicides work on other crops with similar diseases to derive a best guess on how well these may work on currant and gooseberry.

To manage these diseases, copper hydroxide must be applied regularly using short spray intervals to maintain (albeit marginal) efficacy. However, this use pattern often results in phytotoxicity. Mineral oil and sulfur are relatively good products for control of powdery mildew, but they can not be mixed in the same spray tank or be applied close to each other in a spray schedule due to phytotoxic effects. Furthermore, some gooseberry varieties are "sulfur shy" and cannot tolerate the use of sulfur and excessive applications of oil may delay ripening. Like copper fungicides, both have short residual activity and must be applied regularly to maintain efficacy. Nova is an excellent fungicide for managing powdery mildew. Nova is also very effective at controlling rust on apples and is labeled for the control of rust on blackberry and raspberry. Rovral is used primarily for managing gray mold (*Botrytis cinerea*). Although, Rovral is labeled for control of anthracnose on strawberry, it is not very effective.

Typical spray programs for disease management include a dormant application of copper hydroxide or lime sulfur targeted at reducing the overwintering population of anthracnose and powdery mildew. Prebloom applications of copper or wettable sulfur beginning just before bloom and continuing on 7-10 interval or on an "as needed" basis are typical for managing anthracnose. Season-long schedules are often necessary in New York because the labeled fungicides are only moderately effective at controlling anthracnose, especially on the most susceptible varieties. For powdery mildew, Nova can be applied at the sign of the first symptoms or, in problematic areas, at prebloom, bloom, and 2 weeks after. Nova is also registered for control of anthracnose but it is only

moderately effective. Oils and sulfur may also be used but their use can be problematic as discussed above. Only oils are labeled for control of rusts. However, if Nova is used to target powdery mildew, reasonable control of rust can be attained.

Pruning Gooseberries, Summer

Ed Mashburn, Northumberland Berry Works

Many people do not think of pruning during the summer or growing season; however summer pruning is very important to the growing and shaping the plant. This is the constant fine tuning of the process of shaping and controlling the plant. Gooseberries that are growing well will put on a lot of new growth as the fruit sets and enlarges. Here in Pennsylvania this is during May and June, plants will double in total volume. This will make harvesting very difficult, will endanger the plant to pests and disease, and will require a lot of curative pruning in the winter or dormant period. Summer pruning is a "do it now" operation that is a maintenance process that should not ignored or put off too long. It is better to make several short cuts rather than take out long pieces of excess plant. This also allows the plant to expend the growing energy to the portions that will remain and make a stronger plant.

For traditional bush plants

If the plant has been adequately pruned during the past this is strictly a maintenance process. The goals are to keep all canes or shoots straight and avoid crossing and growing toward the center of the plant. This is the time to keep the small side shoots removed to prevent the plant from becoming too dense. I start this pruning during the early bud break season. As leaf buds enlarge and open you will be able to determine that some of the terminal (end) buds are not expanding well or at all. Some of these may have been damaged by disease or by the winter. I find that if these are removed by shortening the cane or branch to a good plump bud the last remaining bud will become a "terminal" bud. The second step of this process is done after the blossoms opens and as the fruit is set. I examine the lowest canes: some may have very few or no fruit blooms, and I remove these at that time unless the plant is young and in the first year of fruiting. Other canes will have large numbers of blooms and/or small fruit formed along the underside of the branch. I shorten these canes so that the terminal end (with few or no blooms) is removed. All canes or shoots should be shortened to encourage the plant to grow more upright and develop a strong erect habit. Fruit will become heavy and weigh the branches down as it enlarges; do not allow the fruiting canes to bend down to the ground. The tips will often root and the plant becomes very difficult to manage. Plants that have long arching canes should be pruned so that the canes do not grow downward much below the highest point of the arch. Canes pruned in this manner will droop more as the weight of fruit increases. They may have to be further shortened or some of the green fruit removed when the size has become larger. This fruit can be used in jam and pies; it requires more sugar. This pruning method makes harvest easier: hold the tip of the cane with the left hand and strip the berries with the right. It is important to remove the side branchlets from the canes as they form, otherwise it is very difficult to reach into the plant and harvest berries from these side shoots. This also reduces the bearing area of the plant and thins the fruit to allow the berries to be larger.

Plants on a leg

Summer pruning of these plants is much the same as for the bush type. Remove the excess sprouts that come out of the scaffold branches. Remove all branchlets that are on top of or on the bottom of the branches. Take out all sprouts that grow toward the center of the plant. Remove any sprouts from the "leg" and all suckers that may arise from the root system. This is especially true if the plant has been grafted because the suckers will not be the same as the plant. All the branches need to be tipped (the ends removed) to keep the branches strong, upright and to facilitate harvesting. I usually do this in late May or early June as by then the fruit has developed some size and the branches tend to droop under the weight of the berries. This also opens up the plant somewhat and allows more air circulation at a critical time. Sometimes it is necessary to further shorten the branches on late ripening cultivars. Remember to always shorten to an upward or topside bud.

Plants on a trellis

Gooseberries grown on a trellis are handled in much the same way as those on a "leg". The main principles apply: keep the "leg" or lower part clear, shorten or tip the canes to help stiffen and strengthen the scaffold or framework of the plant, and do not let the plant become too dense. The lateral branches (those growing in the same direction of the wire) should be tied so that the tip is headed upwards. Do not tie these in a horizontal manner or they will not set as much fruit and there will be a lot of "watersprouts". Remove all the sprouts on the top and bottom of the lateral branches and some of the ones from the sides. This will allow more air and light to the plant and keep it from getting too dense. I allow the side branchlets to grow out into the row for approximately 12 to 15 inches. These should be tipped or shortened as they become heavy with fruit to keep the growing attitude upward. Do not allow too many to remain or the plant will become too dense. Plants growing on a trellis are easier to maintain than the traditional bush. I try to keep all the fruiting portion of the plant between two feet and five feet above the ground.

Plants grown as cordons

Cordons should be attached to a stake or a stake and wire. I keep the lower eight inches free of growth, as a "leg" and then prune the remaining branches in a very long taper or candle shape. The plant should not be more than 20 inches across at the base and should be much less than that near the top. This concept requires a lot of attention as the plants are growing very rapidly in the spring. I tend to fall behind and have to take out larger amounts than planned. A week of rain in May when it is warm will produce long sprouts that droop and suddenly the plant is much too dense and the canes are too long; this slows the growth of the terminal shoot or cane. Keep the central terminal cane tied to the stake or cane. It will break when growing very fast if it is rainsoaked and the wind is blowing. It is necessary to tip or shorten the terminal (upright) tip also; cut it back and then allow only one of the new terminal sprouts to grow. This will produce a stronger plant.

It is almost impossible to prune too much or too often. It is much easier to do it in stages, cut some this week , and then look at it and cut some more. Don't get caught without a pruner! (**Source:** *The Ribes Reporter, Vol 7, I 1, August '95* via *Massachusetts Berry Notes (2001) Vol. 13, No. 10*)

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 broadleafed 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 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, 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.

Strawberry Renovation - Sonia

Schloemann, UMass Extension, Amherst, MA

Strawberry plantings grown in the traditional matted row system should be renovated after harvest for a number of reasons. These include 1) to reestablish narrow rows, 2) rejuvenate the canopy, 3) interrupt disease buildup, 4) knock down insect and mite populations, 5) allow for effective weed control, and 6) stimulate runner production. For best results, renovation should be started immediately after the harvest is completed. Ideally, individual fields or varieties should be renovated when picking is complete rather than waiting until all fields are ready. The following steps describe renovation of commercial strawberry fields.

Controlling Weeds, Part I: Annual broadleaf weeds can be controlled with 2,4-D Formula 40 at 2 to 3 pts./acre in 25-50 gallons of water applied immediately

after harvest. Formula 40 is the ONLY 2,4-D formulation labeled for use in strawberries. The other amine formulations such as Weedar 64 or Amine 4 have a different formulation and are not labeled specifically for strawberries. If grasses are a problem, sethoxydim (Poast) will control annual and some perennial grasses. But do not tank mix Poast and 2,4-D.

Mowing: Mow the old leaves off a couple of inches above the crowns 3-5 days after herbicide application. Take care, especially in uneven fields, not to mow so low that you damage some of the crowns.

Fertilizing: Fertilize the planting with 20 - 40 lbs./acre of Nitrogen, depending on soil type and organic matter content. A soil test earlier in the season will help guide you on the amount of N to apply. This will also help determine phosphorus and potassium needs. Following up with a leaf tissue analysis in August will help evaluate the adequacy of you fertilization program. A second Nitrogen application should be made in August to complete the N requirement of the plants and support fruit bud initiation.

Narrowing rows: Narrowing row width is important since the rows have a tendency to spread out over time. Wide rows lead to low productivity and increased disease pressure. Narrow rows will give better sunlight penetration, better disease control due to improved air circulation, and better overall fruit quality. Also, more berries are produced at row edges than in the middle. The desirable row width at full canopy is 12-18 inches. This means that rows can be narrowed to as little as 6 inches during renovation. This can be done using a roto-tiller, rotovator, multivaror or various cultivators. Contact you Extension Specialist, equipment dealer or another strawberry grower for advice on the various implements.

Cultivation: Work in straw between rows and throw a small amount of soil over the row by cultivation. Strawberry crowns continue development at the top, and new roots are initiated above old roots on the crown, so 1/2 - 1 inches of soil should be cast over the rows to help with rooting. This also helps cover straw in the row and provides a good rooting medium for the new runner plants.

Subsoiling: Soil compaction can result from tractor use and picker traffic in the field, especially on heavy, wet soils. Subsoiling between rows will help break up compacted layers and provide better infiltration of water. Subsoiling is best done late in the renovation sequence since straw and crop residue can interfere.

Controlling Weeds, Part II: Pre-emergence weed control should begin immediately after all cultivation and subsoiling is complete. Sinbar, Dacthal, or Devrinol are suggested materials. Check the product labels carefully. Devrinol must be incorporated by irrigation, rainfall, or cultivation to be effective. Rate and timing of Sinbar application is critical. If regrowth has started at all, significant damage may result. Again, read and follow the label recommendations carefully with all of these products.

Irrigation: Water is needed for both activation of herbicides and for plant growth. This is easy to forget when multiple crops are grown. All the previous steps can be compromised if this step is not taken. Don't let the plants go into stress. Ideally, the planting should receive 1 to1-1/2 inches of water per week from either rain or irrigation. (**Source:** *Massachusetts Berry Notes (2001) Vol. 13, No. 12*)

Strawberry Renovation Weed Management

Rich Bonanno, UMass Extension, Amherst, MA

Following are weed management suggestions for strawberry plantings at renovation. Emerged broadleaf weeds can be controlled with 2,4-D (Formula 40) at 2 to 3 pts./acre applied immediately after the last harvest. Formula 40 is the ONLY 2,4-D formulation labeled for use in strawberries. Be extremely careful to avoid drift when applying 2,4-D. If this application is delayed, some damage to strawberries is also possible. Read and understand the label completely before applying Formula 40. If grasses are present at this time, sethoxydim (Poast) will control both annual and some perennial grasses. However, do not tank mix Poast and 2,4-D. Check the product label for rates and especially for precautions. 3-5 days after the 2,4-D application, strawberry plants should be mowed.

Preemergence weed control should begin immediately after the plants are mowed and the soil is tilled to narrow the crop row. The most common practice at this time is to apply half the annual rate of terbacil (Sinbar at 4 oz/acre). It is essential that the strawberry plants are mowed, even if 2,4-D was not applied, to avoid injury from Sinbar. If regrowth of the strawberry plants has started, significant damage may result. Some varieties are more sensitive to Sinbar than others. If unsure, make a test application to a small area before treating the entire planting. Sinbar should not be used on soils with low organic matter, or on reportedly sensitive varieties such as 'Guardian', 'Darrow', 'Tribute', 'Tristar' and possibly 'Honeoye'. Injury is usually the result of too high a rate or overlapping of the spray pattern. If Sinbar is not used, napropamide (Devrinol at 4 lb/acre) or DCPA (Dacthal at 8-12 lb/acre) should be applied at this time. Dacthal is preferred over Devrinol if the planting is weak. If Sinbar is used, napropamide (Devrinol at 4 lb/acre) should be applied 4 to 6 weeks later. This later application of Devrinol will control most winter annual weeds which begin to germinate in late August or early

September. Devrinol should be applied prior to rainfall or it must be irrigated into the soil. During the summer, Poast can be used to control emerged grasses. Cultivation is also common during the summer months. Cultivations should be shallow and timely (weeds should be small) to avoid root damage to the strawberry planting. The growth of strawberry daughter plants will also limit the amount of cultivation possible especially near the crop row.

Dacthal is again available for use in strawberries with the same label directions as on the previous label. This is good news for strawberry growers since Dacthal is the only herbicide registered for newly-planted strawberries. Dacthal is now being manufactured by AMVAC. (**Source:** *Massachusetts Berry Notes (2001) Vol. 13, No. 12*)

Postharvest Handling and Storage of Berries

Dr. Jennifer DeEll, Fresh Market Quality Program Lead, OMAF

Berries are very perishable and maintaining fresh quality after harvest depends on proper handling, transportation, and storage.

Maturity and Quality Indices: Harvest date is determined by berry surface color. Most standards require more than ½ to ¾ of the berry surface to be colored, depending on the grade and berry type. All berries should be harvested near ripe, as eating quality does not improve after harvest. Appearance (color, size, shape, and freedom from defects), firmness, flavor (soluble solids, titratable acidity, and flavor volatiles), and nutritional value (vitamin C) are all important quality characteristics. For acceptable flavor, a minimum of 7% soluble solids and/or a maximum of 0.8% titratable acidity are recommended.

Ethylene Production and Responses: Strawberries produce very little ethylene, <0.1 ppm per kg per hour at 20oC. Other berries produce between 0.1 and 1.0 ppm per kg per hour at 20oC. Ethylene does not stimulate the ripening of strawberries, raspberries, and blackberries. Therefore, these berries should be harvested near to full ripe. Blueberries are climacteric fruit and will respond to ethylene. However, blueberries should also be harvested near to full ripe because flavor does not improve after harvest. Removal of ethylene from storage air may reduce disease development in all berries.

Cooling and Storage Conditions: Precooling (rapid removal of field heat) is essential within 1 2 hours of harvest. For example, strawberries maintained at 10C have about one-third the storage life as those rapidly cooled down to 0C. Precooling may be accomplished by forcing rapidly moving cold air through stacks of berries (forced-air cooling).

Optimum storage conditions for strawberries (7-10 days), blueberries (2-4 weeks), raspberries and blackberries (2-5 days) are 0C and 90-95% relative humidity. Cranberries (2-4 months) are chilling sensitive and therefore, should be stored at 3C. In general, storage-life is very dependent on the handling of berries during and after harvest.

The highest freezing point is 0.8C for strawberries and blackberries, 0.9C for cranberries, 1.1C for raspberries, and 1.3C for blueberries. Overall, berries with high soluble solids content are less likely to freeze.

Modified atmosphere (MA) packaging for shipment with 15-20% carbon dioxide and 5-10% oxygen reduces the growth of *Botrytis cinerea* (grey mold rot) and other decay causing organisms. In addition, it reduces the respiration and softening rates of berries, thereby extending postharvest life. Whole pallet covers and consumer packages for containment of the modified atmosphere are commonly used.

Physiological Disorders:
Shriveling / Water Loss. Berries are very susceptible to water loss, which results in fruit shriveling and loss of gloss. The maximum permissible amount of water that can be lost (based on weight loss) from raspberries and blackberries before becoming unmarketable is 6%.

MA-Related Disorders. Exposure of berries to <2% oxygen and/or > 25% carbon dioxide can cause off-flavors and brown discoloration, depending on berry and cultivar, duration of exposure, and temperature.

Chilling Injury of Cranberries. Chilling injury can develop in cranberries stored at temperatures below 3C. Symptoms include dull appearance, rubbery texture, and increased susceptibility to decay.

Disease: Diseases are the greatest cause of postharvest losses in berries. Prompt cooling, storage at the lowest safe temperature, preventing physical injury to the fruit, and shipment under high carbon dioxide (10-15%) are the best methods for disease control. In addition, care should be taken to keep diseased or wounded berries out of packages, as rot can spread from diseased to nearby healthy berries.

Gray mold (*Botrytis cinerea*) can be a serious problem in berries. This disease can develop during storage if fruit has been contaminated though harvest and handling wounds. Avoiding mechanical injuries and good temperature management are effective control measures. This fungus continues to grow at 0C, albeit growth is very slow at this temperature.

Rhizopus rot (*Rhizopus stolonifer*) can also be a problem in berries. This fungus forms a fluffy, black

whiskery mold on the fruit surface. Cooling the berries and keeping them below 5C is very effective against this fungus, since it will not grow at these temperatures. (**Source:** *The All Ontario Berry Grower (2002) Vol. 6 June*).

Acknowledgements: Figure 1 is courtesy of Greg English-Loeb; Figure 2 was stolen from Marvin Pritts' Berry Diagnostic Tool found at: http://www.hort.cornell.edu/department/faculty/pritts/BerryDoc/Berrydoc.htm. Figures 9a and 9b are from Dan Legard at the Gulf Coast Research and Education Center Dover (http://strawberry.ifas.ufl.edu/)

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:

Dr. William (Bill) Turechek
New York Berry News, Editor
Department of Plant Pathology
New York State Agricultural Experiment Station
690 W. North Street
Geneva, NY 14456

OR *Email*: wwt3@cornell.edu

WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, MAY 19th, 2002

	Temperature				Growing Degree Days (Base 50)			Precipitation (Inches)			
	High	Low	Avg	DFN[1]	Week	Season[2]	DFN	Week	DFN	Season	DFN
Hudson Valley											
Albany	77	33	50	-8	19	242	89	3.26	2.49	6.11	1.09
Glens Falls	76	28	48	-8	16	197	82	2.76	1.92	7.73	2.57
Poughkeepsie	77	34	51	-8	22	237	53	4.19	3.21	9.32	3.18
Mohawk Valley											
Utica	72	37	47	-11	10	181	44	3.53	2.69	10.67	4.91
Champlain Valley											
Plattsburg	69	37	48	-9	12	159	43	1.67	1.04	5.83	1.32
St. Lawrence Valley											
Canton	65	34	46	-9	7	149	51	2.38	1.74	7.52	2.89
Massena	63	34	46	-10	6	141	29	1.8	1.24	6.24	2.07
Great Lakes											
Buffalo	68	34	46	-12	7	181	40	2.74	2.04	8.37	3.63
Colden	71	33	46	-9	9	144	44	3.34	2.57	10.72	4.81
Niagara Falls	68	32	46	-12	5	160	6	2.79	2.16	8.44	3.52
Rochester	71	37	48	-10	12	228	68	1.98	1.36	6.3	2.06
Watertown	63	37	47	-8	6	146	44	2.69	2.06	7.71	3.59
Central Lakes											
Dansville	71	34	47	-10	10	191	46	2.4	1.77	6.8	2.28
Geneva	72	35	47	-10	11	181	46	2.35	1.71	6.19	1.53
Honeoye	72	34	48	-9	11	179	41	2.51	1.89	7.67	3.03
Ithaca	71	34	48	-8	10	165	50	3.84	3.09	8.39	3.53
Penn Yan	70	36	48	-8	13	203	68	2.11	1.47	5.54	0.88
Syracuse	70	39	49	-9	11	226	67	2.84	2.14	8.69	3.4
Warsaw	67	32	44	-10	3	133	47	3.38	2.61	8.68	3.22
Western Plateau											
Alfred	71	33	48	-8	10	152	51	3.03	2.27	8.22	3.16
Elmira	72	34	50	-7	18	206	79	2.84	2.14	6.22	1.66
Franklinville	70	33	47	-6	10	124	58	3.32	2.55	8.38	3.01
Sinclairville	71	32	48	-6	11	150	62	4.09	3.22	10.48	4.33
Eastern Plateau											
Binghamton	70	31	48	-9	14	177	56	2.55	1.78	7.59	2.42
Cobleskille	72	32	47	-9	9	173	67	3.03	2.2	6.58	1.14
Morrisville	65	32	44	-12	1	118	19	3.44	2.6	9.87	4.59
Norwich	72	33	48	-8	5	150	40	2.66	1.82	6.97	1.35
Oneonta	74	34	47	-7	5	169	75	3.39	2.41	7.9	1.81
Coastal											
Bridgehampton	78	37	53	-4	32	205	88	3.82	2.98	8.97	2.63
New York	81	43	58	-4	63	421	147	2.33	1.49	6.96	0.79

1. *D*eparture *F*rom *N*ormal
2. 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. Their cooperation is greatly appreciated.

WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, MAY 26th, 2002

	Temperature				Growing Degree Days (Base 50)			Precipitation (Inches)			
	High	Low	Avg	DFN[1]	Week	Season[2]	DFN	Week	DFN	Season	DFN
Hudson Valley											
Albany	79	29	52	-9	37	279	56	0.06	-0.72	6.17	0.37
Glens Falls	77	27	50	-9	25	222	49	0.02	-0.82	7.75	1.75
Poughkeepsie	83	30	52	-10	31	268	8	0.00	-0.98	9.32	2.20
Mohawk Valley											
Utica	76	27	49	-10	24	205	7	0.26	-0.58	10.93	4.33
Champlain Valley											
Plattsburg	81	31	51	-8	26	185	11	0.06	-0.60	5.89	0.72
St. Lawrence Valley											
Canton	73	29	50	-7	25	174	26	0.87	+0.17	8.39	3.06
Massena	71	28	50	-9	23	164	-3	0.07	-0.49	6.31	1.58
Great Lakes											
Buffalo	70	33	49	-11	20	201	-5	0.53	-0.19	8.90	3.44
Colden	74	29	47	-10	13	157	7	0.50	-0.34	11.22	4.47
Niagara Falls	72	32	49	-11	23	183	-38	0.16	-0.52	8.60	3.00
Rochester	78	36	52	-8	32	260	33	0.27	-0.36	6.57	1.70
Watertown	71	28	49	-8	20	166	14	0.28	-0.35	7.99	3.24
Central Lakes											
Dansville	76	31	49	-11	17	214	5	0.42	-0.25	7.02	1.83
Geneva	78	35	50	-9	19	200	3	0.30	-0.40	6.49	1.13
Honeoye	79	31	49	-11	19	198	-4	0.26	-0.39	7.93	2.64
Ithaca	77	28	48	-10	23	188	18	0.03	-0.74	8.42	2.79
Penn Yan	76	31	51	-9	29	232	35	0.23	-0.47	5.77	0.41
Syracuse	78	32	53	-8	35	261	33	0.38	-0.39	9.07	3.01
Warsaw	72	29	46	-10	13	146	14	0.58	-0.23	9.26	2.99
Western Plateau											
Alfred	76	29	48	-10	15	167	14	0.40	-0.41	8.62	2.75
Elmira	77	29	50	-9	30	236	49	0.36	-0.40	6.58	1.26
Franklinville	74	26	44	-11	6	130	26	0.68	-0.14	9.06	2.87
Sinclairville	74	25	45	-11	5	155	22	0.68	-0.23	11.16	4.10
Eastern Plateau											
Binghamton	72	28	49	-9	32	209	30	0.18	-0.59	7.77	1.83
Cobleskille	76	27	50	-9	21	194	36	0.20	-0.65	6.78	0.49
Morrisville	71	28	46	-11	6	124	-25	0.17	-0.70	10.04	3.89
Norwich	77	26	47	-11	15	165	2	0.09	-0.76	7.06	0.59
Oneonta	76	28	50	-7	25	194	52	0.22	-0.76	8.12	1.05
Coastal											
Bridgehampton	78	39	55	-5	37	242	66	0.00	-0.84	8.97	1.79
New York	85	44	59	-5	67	488	115	0.03	-0.81	6.99	-0.02

1. *D*eparture *F*rom *N*ormal
2. 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 2nd, 2002

	Temperature				Growing Degree Days (Base 50)			Precipitation (Inches)			
	High	Low	Avg	DFN[1]	Week	Season[2]	DFN	Week	DFN	Season	DFN
Hudson Valley											
Albany	83	45	68	6	125	404	96	0.93	0.09	7.1	0.46
Glens Falls	82	36	65	6	106	328	83	0.63	-0.18	8.38	1.57
Poughkeepsie	85	53	67	5	123	391	40	1.01	0.04	10.33	2.24
Mohawk Valley											
Utica	80	39	65	5	104	309	37	1.99	1.1	12.92	5.43
Champlain Valley											
Plattsburg	81	37	65	5	107	292	45	0.93	0.23	6.82	0.95
St. Lawrence Valley											
Canton	82	40	65	7	103	277	66	2.04	1.34	10.43	4.4
Massena	81	35	64	5	100	264	30	1.67	1.04	7.98	2.62
Great Lakes											
Buffalo	81	43	66	5	112	313	28	0.76	-0.03	9.66	3.41
Colden	79	41	63	5	94	251	39	0.77	-0.12	11.99	4.35
Niagara Falls	81	40	65	4	106	289	-13	0.49	-0.24	9.09	2.76
Rochester	82	44	67	6	118	378	73	2.79	2.13	9.36	3.83
Watertown	82	37	63	5	95	261	47	1.01	0.38	9	3.62
Central Lakes											
Dansville	82	43	66	6	115	339	52	0.81	0.04	7.91	1.95
Geneva	81	44	67	7	118	318	45	1.46	0.69	7.95	1.82
Honeoye	80	39	66	6	114	312	31	1.46	0.72	9.39	3.36
Ithaca	80	42	66	7	111	299	60	0.8	-0.03	9.22	2.76
Penn Yan	80	45	66	6	114	346	73	0.68	-0.1	6.44	0.31
Syracuse	81	40	67	6	123	384	76	1.22	0.44	10.29	3.45
Warsaw	78	44	64	6	96	242	52	3.11	2.22	12.37	5.21
Western Plateau											
Alfred	80	42	65	7	106	273	56	1.13	0.22	9.75	2.97
Elmira	83	41	66	6	115	351	91	2.86	2.05	9.44	3.31
Franklinville	79	35	61	6	80	210	56	1.1	0.21	10.16	3.08
Sinclairville	82	36	62	5	87	242	51	0.79	-0.19	11.95	3.91
Eastern Plateau											
Binghamton	79	46	64	5	104	313	63	1.4	0.61	9.17	2.44
Cobleskille	79	43	65	6	108	302	78	0.97	0.04	7.75	0.53
Morrisville	77	41	63	5	94	218	8	1.4	0.49	11.44	4.38
Norwich	82	42	64	5	98	263	35	0.65	-0.26	7.71	0.33
Oneonta	82	48	66	9	115	309	108	1.28	0.28	9.4	1.33
Coastal											
Bridgehampton	79	55	64	4	101	343	92	0.38	-0.47	9.35	1.32
New York	88	58	71	6	151	639	152	0.51	-0.33	7.5	-0.35

1. *D*eparture *F*rom *N*ormal
2. 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 9th, 2002

	Temperature				Growing Degree Days (Base 50)			Precipitation (Inches)			
	High	Low	Avg	DFN[1]	Week	Season[2]	DFN	Week	DFN	Season	DFN
Hudson Valley											
Albany	81	41	62	-4	83	487	79	1.83	0.99	8.93	1.45
Glens Falls	81	35	60	-3	68	396	65	1.06	0.29	9.44	1.86
Poughkeepsie	84	44	61	-5	81	472	17	2.69	1.78	13.02	4.02
Mohawk Valley											
Utica	83	39	60	3	74	383	24	1.51	0.58	14.42	6.01
Champlain Valley											
Plattsburg	76	36	58	-6	55	347	11	0.67	-0.03	7.49	0.92
St. Lawrence Valley											
Canton	74	35	57	-5	51	328	41	0.27	-0.50	10.70	3.90
Massena	71	36	57	-5	54	318	3	0.25	-0.45	8.23	2.17
Great Lakes											
Buffalo	76	44	61	-4	76	389	10	0.51	-0.33	10.17	3.08
Colden	79	37	57	-5	52	303	17	0.00	-0.97	11.99	3.38
Niagara Falls	78	43	59	-6	64	353	-44	0.97	0.19	10.06	2.95
Rochester	82	43	61	-3	78	456	61	0.52	-0.18	9.88	3.65
Watertown	77	34	58	-3	60	321	33	0.43	-0.26	9.43	3.36
Central Lakes											
Dansville	85	39	60	-4	69	408	29	1.21	0.33	9.06	2.11
Geneva	83	43	60	-4	69	387	24	0.75	-0.09	8.70	1.73
Honeoye	83	38	59	-5	65	377	3	0.76	-0.08	10.15	3.28
Ithaca	85	39	59	-4	63	362	41	2.03	1.18	11.25	3.94
Penn Yan	84	41	61	-3	77	423	60	1.16	0.32	7.60	0.63
Syracuse	85	40	62	-1	87	471	71	0.40	-0.44	10.69	3.01
Warsaw	78	40	57	-4	51	293	34	1.70	0.72	14.07	5.93
Western Plateau											
Alfred	83	40	59	-2	67	340	47	1.93	0.91	11.68	3.88
Elmira	86	39	61	-3	75	426	79	2.02	1.18	11.46	4.49
Franklinville	81	35	57	-2	55	265	50	1.60	0.62	11.76	3.70
Sinclairville	82	34	58	-3	59	301	39	1.60	0.55	13.55	4.46
Eastern Plateau											
Binghamton	81	42	59	-3	68	381	47	2.13	1.29	11.30	3.73
Cobleskille	81	35	58	-4	60	362	60	2.96	1.98	10.71	2.51
Morrisville	78	38	56	-5	49	267	-16	1.32	0.37	12.76	4.75
Norwich	82	37	58	-3	61	324	19	4.05	3.09	11.76	3.42
Oneonta	84	39	61	2	78	387	115	3.83	2.85	13.23	4.18
Coastal											
Bridgehampton	74	45	60	-3	72	415	74	2.22	1.33	11.57	2.65
New York	84	55	68	-2	124	763	146	2.31	1.48	9.81	1.13

1. *D*eparture *F*rom *N*ormal
2. 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. Their cooperation is greatly appreciated.