

# Berry Notes

Prepared by the University of Massachusetts Fruit Team

July 8, 2003, Vol. 15, No. 12 Summer Issue #7  
<http://www.umass.edu/fruitadvisor/berrynotes/index.html>

## Volume 15-- 2003

*Berry Notes is edited by Sonia Schloemann with articles written by other contributors with attribution; sources are cited. Publication is funded in part by the UMass Extension Agriculture and Landscape Program. Questions can be directed to Sonia Schloemann at 413-545-4347, sgs@umext.umass.edu. Please cite this source if reprinting information that originates here.*

### Crop Conditions:

**Strawberry** harvest is complete in many locations and renovation is underway. Still, some fields are producing good quality fruit. As mentioned last week, growers should check fields for evidence of black vine weevil or strawberry root weevil feeding (notching on margins of the leaves) and take steps to control this insect before mowing for renovation. See last weeks message for more information on weevil control. **Highbush Blueberries** are ripening and harvest should begin soon. Lowbush should be following soon behind. Blueberry maggot fly is active now. Check your traps. Also Japanese Beetle are beginning to emerge. See last weeks message for detailed information on Japanes Beetle. **Summer raspberries** are also ripening with harvest started this week on early varieties. Fruitset looks to be excellent on varieties that didn't suffer winter injury. Check for sap beetle, two-spotted spider mite, Japanese beetle and potato leafhopper. Cane diseases will also be evident now. **Grapes** are in mid to post-bloom and canopy management activities are in full swing. Shoot positioning and leaf pulling are some of the activities underway in vineyards. More on these activities in upcoming issues. Continue scouting for grape berry moth and mites. Japanese beetles should be active soon. Potato leafhopper are very active now. See the article below for more on this. Powdery and Downey mildew are beginning to show up. Maintain a good post bloom disease management program to avoid late season problems. Currants and Gooseberries are ripening. Harvest will begin on early varieties soon. Summer pruning

### Environmental Data

#### STATE WEATHER SUMMARY For the Week Ending Sunday, July 5, 2003

Prepared by AWIS, Inc. (available at <http://www.nass.usda.gov/weather/cpcurr/new-eng-crop-weather>)

STATE	AIR TEMPERATURES				PRECIPITATION	
	LO	HI	AVG	DFN	LO	HI
ME	45	94	70	+5	0.00	2.28
NH	41	94	71	+5	0.00	1.42
VT	44	93	71	+5	0.06	1.98
MA	49	93	73	+5	0.00	0.56
RI	56	92	73	+5	0.13	0.81
CT	50	94	73	+3	0.00	0.91

(Source: New England Ag. Statistics Service, Weekly Crop Weather Report, Volume 23, Number12, July 7, 2003)

---

## Strawberry

### Summer Management of Foliar Diseases of Strawberry

Bill Turechek, Cornell University

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'.

**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 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.

**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.

**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. 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.

**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 tankmix 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. (*Source: New York Berry News, Vol 1., No. 4*)

### **Renovation of Plasticulture Strawberries**

*Jerome L. Frecon, Rutgers Cooperative Extension*

Strawberries grown on plasticulture can be renovated in July. For varieties (Sweet Charlie) and plantings with moderate vigor, mow tops with a rotary mower, leaving several leaves on the plant. For very vigorous varieties (Chandler) and plantings, cutting away a portion of the crown with an asparagus knife leaving 3 crowns or a combination of mowing followed by crown thinning, may be the most effective renovation technique. After renovation, maintain adequate soil moisture and good insect and disease control. In early September, apply 60 pounds of N, P2O5, and K2O via drip irrigation and manage the renovated planting using the same cultural practices as for a new planting. Renovation has improved berry size, however, size is usually smaller than in the first harvest season. Marketable yields of renovated strawberries have been equal to yields in the first harvest season. Renovation is especially useful if the planting will be harvested as a Pick-Your-Own. (*Source: Rutgers Plant and Pest Advisory; Fruit Edition, June 11, 2002*)

---

## **Blueberry**

### **Monitoring for blueberry maggot**

*Rufus Isaacs, Michigan State University*

Blueberry plants have developed to the point where emergence of blueberry maggot is expected in the coming few weeks. The recent rains, combined with warm temperatures, are ideal conditions for adult flies to emerge from the soil and begin their pre-egg-laying phase. By monitoring during this phase, growers can determine when the flies become active in a field and this can help determine the start of a spray program to protect fruit from maggot infestation.

Monitoring for emergence of adult blueberry maggot flies should be done using Pherocon AM board traps folded in a V orientation with the sticky side facing out. These traps come pre-baited or can be manually baited using “chargers” filled with ammonium acetate or ammonium carbonate. Place traps on the edge





of a field near to wooded borders, or in areas with a history of blueberry maggot infestation.

Traps have a lifespan of approximately two weeks, after which they must be replaced or re-baited. This is particularly true of the prebaited traps, which lose their attractiveness after that time. If chargers are used, they should be checked periodically to ensure they are full and have not become diluted with rainwater. Traps should ideally be checked twice per week to determine the start of fly emergence. After this, there is a 7 to 10 day period before flies begin egg laying, providing a window of time for management. (*Source: Michigan Fruit CAT Advisory, Vol. 18, No. 12, July 1, 2003*)

## Raspberry

### Don't Get Put On The Spot!

*Cathy Heidenreich, Cornell University*

There are several diseases on brambles that make their appearance in early to mid summer. Most of these diseases can be diagnosed by examining the symptoms they cause on their leaves and canes. This article discusses the most common summer diseases of brambles, their identification and control. Be on the look out for the following summer diseases:

**Raspberry leaf spot:** Red raspberries are generally more susceptible to this fungal disease than black raspberries. The disease causes premature leaf drop when infection is severe, reducing vigor and making plants more susceptible to winter injury. A similar disease occurs on blackberries (Septoria Leaf Spot, *Septoria rubi*) but is not commonly found in our growing region. Taylor and Sentry are particularly susceptible cultivars. Other susceptible cultivars include Reveille, Canby, and Boyne. Latham, Heritage, September, Fallgold and Redwing are less susceptible.

**How to recognize it:** Leaf infections start out as small (1/16") greenish brown to black, round to angular spots on the upper surface of young leaves in late spring to early summer. These spots may lighten in color to white or gray, and typically enlarge and coalesce as the season progresses. Dead areas may sometimes drop out, producing a shothole effect on the leaves. Small, inconspicuous cane lesions may also occur at cane bases. Early leaf symptoms of this disease may be confused with those of raspberry anthracnose. Examine stems for purple red to ash grey lesions in the mid stem regions, which indicate anthracnose infections.

**What to do:** Remove old fruiting canes, and dead and damaged canes after harvest. Apply Nova 40W at 1.5-2.5 oz/A in plantings with a history of the disease or when conditions favor disease development.



**Orange rust:** This is the most important bramble rust disease in the Northeast affecting black and purple raspberries and blackberries; red raspberries are not susceptible to this disease. Unlike other rusts, orange rust has only a single host, remaining on *Rubus* spp. to complete its entire life cycle. Although given the same name, orange rust is caused by two different species of fungi: one that affects black and purple raspberries, caused by *Arthuriomyces peckianus*, and the other that affects blackberries, caused by *Gymnoconia nitens*. Wind and rain carry spores of these two fungi to raspberry and blackberry leaves in late May to early June. When conditions are favorable, spores germinate and infect leaves. Orange yellow pustules (aecia) form on the undersides of infected leaves, that several weeks later become covered with



waxy orange masses of spores. Depending upon weather conditions, small brown back spore structures (telia) develop on the underside of infected leaves three to six weeks later. Telia release another spore type that may infect directly and also produce basidiospores, which overwinter in buds. Both fungi become systemic and grow down into crowns and roots, where they overwinter. Orange rust does not kill plants but greatly reduces both plant yield and vigor. Infected plants rarely recover, so losses from this disease can be of serious economic significance.

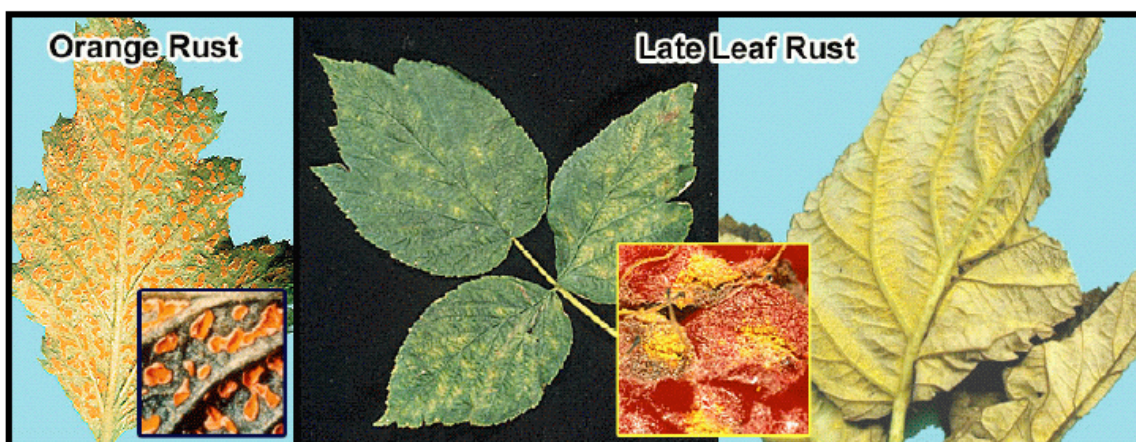
**How to recognize it:** The lower surfaces of new leaves are covered with yellow orange pustules and waxy orange spore masses. New canes arising from infected plants in spring are weak, spindly, and thornless, sometimes with misshapen, pale leaves. These infected canes arise in bunches, rather than singly as with healthy plants. Orange rust differs from late leaf rust in that it does not cause fruit infections.

**What to do:** Avoid new plantings near wooded areas or fence rows unless wild brambles are eradicated first. Check new New York Berry News, Vol 2., No. 6 Tree Fruit and Berry Pathology -10- plantings carefully 1 month after establishment, and each year thereafter in early spring when canes are 12-18" tall. It is essential to identify, dig up and burn infected plants before spores are released from aecia on leaf lower surfaces. Nova 40W may be applied to remaining plants to help reduce the number of new infections.

**Late leaf rust:** Known also as autumn, late raspberry, late yellow, American spruce-raspberry rust, this disease affects mainly cultivated red and purple raspberries and some wild red raspberries. Caused by the fungus, *Pucciniastrum americanum*, late leaf rust differs from orange rust as infections do not become systemic, and it requires a second host (White spruce, *Picea glauca*) to complete its life cycle. This disease was previously thought to be of minor importance but serious outbreaks have become more common in recent times. Severe infections may result in premature leaf fall, reduced plant vigor and yield and increased winter injury to infected canes. Fruit infections lead to production of bright yellow spore masses on fruit surfaces, making fruit unmarketable for fresh-market sales. Summer-bearing cultivars often escape fruit infections; Fall-bearing raspberries tend to develop fruit infections if weather conditions are favorable for disease development.

**How to recognize it:** Leaf upper surfaces develop small yellow spots that gradually turn brown before leaves die in the fall. Yellow pustules with powdery spore masses (called uredinia) can be seen in corresponding areas on leaf lower surfaces by late July. Additionally, flowers, flower calyxes, petioles and fruit of all stages are susceptible to infection. Late leaf rust differs from orange rust in that it has powdery, rather than waxy, spore masses on the lower sides of leaves. Canes lesions have been reported in some instances, but are not common.

**What to do:** Avoid establishing new plantings near white spruce stands. Where practical, remove white spruce. Removal and destruction of infected leaves and debris in the fall should reduce overwintering inoculum and spruce infections in the spring.



**Powdery mildew:** This fungal disease, caused by *Sphaerotheca macularis*, may be a problem on susceptible cultivars of red, black and purple raspberries when weather conditions are favorable. Blackberries and hybrids are usually not affected. Susceptible cultivars include Royalty, Reveille, Latham, Hilton, Dundee and Logan. Although this bramble disease is caused by the same fungus responsible for strawberry powdery mildew, strains of the fungus appear to be host specific i.e. strawberry strains do not infect raspberry and visa versa. *S. macularis* overwinter as mycelia (minute fungal threads) in buds on shoot tips or as cleistothecia (spore producing structures) on infected canes. These serve as inoculum sources for initial infections. Conidia (secondary spores), produced abundantly on infected tissue, are spread by wind and cause repeat infections. Warm, dry weather favors development and spread of this disease, which often appears in mid-to late summer.

**How to recognize it:** Undersides of infected leaves are covered with powdery white mycelial growth, some times causing them to curl upwards. Some cultivars develop light green blotches on leaf upper surfaces, corresponding to white patches below. Infected shoots appear long and spindly with dwarfed leaves. Severe infections may cause stunting of plants and yield reductions. Flower infections can reduce both quantity and quality of fruit.

**What to do:** Remove infected primocanes and bury or burn them to reduce spores for disease spread. Nova 40W is an excellent mildewcide and should be used on susceptible varieties.

**Verticillium wilt:** Verticillium wilt is a very serious disease of black raspberries, often called bluestem or blue stripe wilt, because of the symptoms it causes on canes. Red raspberries are generally more resistant to *Verticillium* than black raspberries. The disease also occurs on purple raspberries and blackberries. Two species of the fungus have been shown to cause wilt of brambles, *Verticillium albo-atrum* and *V. dahliae*. These fungi are common soil pathogens and infect more than 160 other crops and weed species. Crops such as potato, eggplant and pepper are particularly susceptible to *Verticillium*; other potential host crops are strawberry, stone fruits (such as cherry), squash and cucumber.

**How recognize it:** Leaves of infected plants turn pale in mid-summer. Infected plants may appear to recover during cool fall weather. The following spring, however, leaves wilt, turn yellow and fall off, starting at the bottom of the cane and progressing upwards. Symptoms may only be seen on one side of the cane or the other, or only on one or two canes out of several in a hill. Infected canes show blue discoloration and may appear stunted. Infected plants usually die in 1-3 years. Symptoms on red raspberry are less severe, but similar. Infected blackberry canes do not turn blue. Those infected canes surviving the winter may leaf out and set fruit, only to collapse during warm weather.



News, Vol 2., No. 6, June 17, 2003)

**What to do:** Brambles should not be planted after susceptible crops without a 3-4 year rotation to non-host crops such as wheat or corn. Weeds such as nightshade, horse nettle, groundcherry, redroot pigweed and lambs quarters should also be strictly controlled in current and future planting sites to keep *Verticillium* populations low in soil. Alternatively, the planting area should be treated with a broad-spectrum fumigant prior to planting to reduce incidence of this disease. Fungicide applications to the soil have proved ineffective in controlling Verticillium wilt. (Source: New York Berry

---

## Grape

### Potato Leafhopper in Grapes

Alice Wise and Daniel Gilrein, Cornell University

Potato leafhopper (PLH) finally arrived and is at treatable levels in some vineyards. PLH nymphs are pale yellow-green and walk sideways like a crab. This insect does not overwinter on Long Island, but rides warm air masses from the south. The constant migration means all stages may be present at any one time in early summer and repeat invasions in the vineyard may occur. In some seasons, PLH infestations have unfortunately persisted well into August.

PLH injects a toxin when feeding, causing chlorosis (yellowing) and even browning of the leaf edge, known as hopperburn. Leaves are sometimes cupped, especially on shoot terminals which can also be stunted. In vineyards, it is notoriously difficult to scout for PL due to time constraints as well as the extremely high mobility of this pest. Many managers do an informal "trellis shake" to help gauge the severity of infestation. Thus, deciding on treatment is a judgement call as there are no hard and fast thresholds (in apples, a threshold of 1 nymph per leaf is used, out of 50 - 100 leaves counted per orchard block) and vines can tolerate some injury. Also factor in the degree of injury, general health of vines and need for control of grape berry moth and Japanese beetle. Note that young vines are potentially more affected by PLH so that intervention might be sooner vs. mature vines.

Options for treatment include Danitol (24 hr reentry interval, 21 days to harvest), Sevin (12 hr, 21), Imidan (24 hr, 14), Provado Solupak (12 hr, 0), Lannate (7 day reentry, 14) and azadirachtin, products based on a neem seed extract [Aza-Direct, Azatin XL Plus, Neemix 4.5 (all 4 hr, 0); Ecozin 3%EC (12 hr, 0)], horticultural oils such as JMS Stylet Oil (4 hr, 0), Ultrafine Oil and insecticidal soaps such as M-Pede and Olympic. Danitol and Lannate are federally restricted-use and toxic to predator mites, although Danitol is also a miticide. Although we have some concerns regarding possible mite resurgence following use of Danitol or Sevin, in a 2002 study on apple reported by Dr. Dick Straub at the Hudson Valley Lab a single application of Danitol (3.6 oz/100 gal) in late August did not lead to flare-up in European red mite populations and some local users have also not seen any problems. Valent recommends no more than two applications/season due to concerns about the development of resistant PL and ERM populations, although more are allowed on the label depending on rate. Dr. Straub and Peter Jentsch also tested lower-than-label rates of Provado 1.6Fin apple (Provado Solupak is labeled for grape) for potato leafhopper control and found in this trial ([http://www.nysaes.cornell.edu/ent/scaffolds/2001/6.25\\_insects.html](http://www.nysaes.cornell.edu/ent/scaffolds/2001/6.25_insects.html)) application frequency (3 applic @ 10 day int.) was more important than rate in controlling injury. Growers might experiment with reducing the rate (perhaps 0.5 oz/A; lower-than-label-rate applications in agriculture are permitted in NY) as long as re-application is made when leafhoppers again start to build. Note that Provado Solupak requires at least 14 days between applications in grape, so use another material (e.g. Imidan) between treatments if necessary. Sevin is also toxic to some predator mites and there are concerns for flaring mites with use, so watch for infestations if using. We have no experience with azadirachtin materials, although they primarily act as insect growth regulators (for nymphs) they are sometimes reported repellent (for adults) as well. Grower experience has been that Stylet Oil will work moderately well against ERM if coverage is excellent and the infestation is low to moderate; Stylet Oil typically is not used specifically for PL control. Grower experience with soaps against PL has been disappointing. Caution is advised with soaps and oils phytotoxicity is a concern with temperatures  $\geq 85^{\circ}\text{F}$ . Also, there are a number of products that are not compatible with (either as tank mixes and/or sprayed in close proximity to) soaps and oils - see labels for details. References: Scaffolds newsletters vol. 10 No. 15, 6/10/01 and Vol 8 No. 15 6/28/99. (*Source: Long Island Fruit & Vegetable Update, No. 16, July 3, 2003*)

---

## **Currants and Gooseberries**

### **Summer Pruning Gooseberries**

*Ed Mashburn, Northumberland Berry Works, PA*

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 be 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 open 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, 11, August '95*)

---

## **Meetings**

### **Designing and Building Containment Facilities For Pesticide Storage and Mixing/Loading**

**July 15, 2003 11:00 am to 1:00 pm**

UMass Cold Spring Orchard Research and Education Center Belchertown, Mass.



- ❖ Are you a grower or landscape professional interested in learning about state guidelines for proper storage and mixing/loading of agricultural chemicals?
- ❖ Are you considering building a facility, but unsure about cost, building code, design, and construction issues?
- ❖ Have you heard about cost-sharing options available through the USDA EQIP Program?

**Then join us to see and learn about a fully operational facility at the UMass tree fruit orchards in Belchertown.**

Topics to be covered include:

- ❖ Generic and Specific Facility Designs
- ❖ Effective Lower Cost Options
- ❖ Pesticide Security and Signage
- ❖ Employee Protection Considerations
- ❖ Facility Standard Operating Procedure

A \$25 per person pre-registration fee will be charged to cover meeting costs, coffee and snacks. Pesticide-license re-certification credit (2.0 hours) will be offered for all categories.

**Co-Sponsored by UMass Extension and the USDA Natural Resource Conservation Service**

For more information, contact Natalia Clifton at 413-545-1044 or Bill Coli at: 413-545-1051

-----  
**Please use one form per person**

Please return this form with your check or money order made payable to the University of Massachusetts to:  
 Pesticide Education, Agricultural Engineering Bldg., Univ. of Massachusetts, Amherst, MA 01003

**Registration Fee: \$25 per person for pesticide applicators**

**Designing & Building Containment Facilities for Pesticide Storage & Mixing/Loading July 15,  
 2003 11:00 a.m. to 1:00 p.m.**

Your Name: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City \_\_\_\_\_  
 State: \_\_\_\_\_ Zip: \_\_\_\_\_ -- \_\_\_\_\_  
 Day/Work Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_  
 Applicator's License Number: \_\_\_\_\_

-----  
**Directions:**

**From the South and East:** From the Mass Pike take the Palmer exit. Follow Route 181 toward Belchertown. About 2 miles BEFORE reaching Belchertown Center there is a sign for the Research center on the right. Take that right (onto Cold Spring Road). In about 0.5 miles, bear left onto Sabin Street.

**From the east on Route 9:** About 2.5 miles BEFORE Belchertown Center, look for the CSOREC orchard sign and take a left onto Sabin Street. In approximately 1.75 miles, you'll see orchard trees on both sides of the road and the red barn will be on your right.

**From the West:** From I 91, take Route 9 exit toward Amherst. Continue on Route 9 through Amherst to the Intersection with Route 202 and Route 181 in Belchertown Center. Proceed on Route 181 toward Palmer for about 2 miles, bear left onto Cold Spring Road. In about 0.5 miles, bear left onto Sabin Street. Look for the big red barn on your left.

**From the North:** From Route 2, take the Orange Exit onto Route 202 to the intersection with Route 9. From the Route 9/Route 202 intersection, take Route 9 East for about 2.5 miles, and turn right onto Sabin Street. In approximately 1.75 miles, you'll see orchard trees on both sides of the road and the red barn will be on your right.

## **TWILIGHT MEETING TUESDAY JULY 15, WARD'S BERRY FARM**

Join us for an exciting twilight meeting at Ward's Berry Farm in Sharon MA, hosted by Jim and Bob Ward and their family. Close to the junction of I-495 and I- 95, this farm is easy to reach from all over the state. We've had great meetings at this innovative and successful farm before - and there's plenty of new things to see! Mini trade show: We have invited commercial agricultural suppliers to set up displays from 4-5:30. More details on this next week. Food: Refreshments at 4:45 compliments of Ward's Berry Farm. Farm Tour: starts promptly at 5:30. Topics:

1. Farmstand, rebuilt two years ago, open year round. Features: 3 coolers with distinct temperatures, commercial kitchen (Jam, baked goods, etc), berry smoothie bar; sandwich counter; loading docks for palletized product.
2. Ebb and flow benches in gutter-connected greenhouse;
3. Hosting space for a 4H Club to raise animals - great for the farm, great for the club.
4. Corn maze
5. No-till sweet corn
6. Strawberries including post harvest techniques and applying nematodes through drip to suppress strawberry root weevil
7. tomato: managing bacterial diseases; using stake and weave with 60" stakes for indeterminate varieties; heirlooms for restaurant sales; drip on bare ground
8. Hosting beehives
9. Melons and squashes: striped cucumber beetle management using Admire transplant drench, perimeter trap crops, and timing.
10. Pumpkins: no-till pumpkin system - how to manage planting, nutrient, weeds and insects
11. Farming in a Zone II - living with the regulations.
12. Developing the business by making the farm a destination for families, school tours, birthday parties.

The tour will be on foot but a wagon will be provided for those not comfortable with walking. Donations will be requested to help cover the costs of the meeting. Pesticide applicator contact hours have been requested. Directions: Take Exit 8 off I-95 (This is the section of I-95 between old Rte 128 in Boston and Providence. Can be accessed from I-95 (old 128) or I-495), go east toward Sharon 1/2 mile past shopping plaza. Farm is on the right.

### **Additional Upcoming Twilight Meetings**

Taking an evening to see another farm operation can give you new ideas that are worth a lot to your business. The following list is compiled from several sources. More tours will be taking place in late August and September. Check our website (<http://www.umassvegetable.org>) for a complete list.

**July 8, Tuesday: New Hampshire Vegetable & Berry Growers' Twilight Meeting** Moulton Farm, hosted by John Moulton, farm owner Meredith, NH in Belknap County Contact: UNH Cooperative Extension (603) 673-2510

**July 10, 5:30-7:30 PM, Thursday: Season Extension on a Southern Vermont Organic Farm.** Clearbrook Farm, Shaftsbury, VT. Host: Andrew Knafel. Co-sponsored by NOFA-VT. Andrew Knafel grows 20 acres of certified organic vegetables, as well as bedding plants, spring seedlings, and strawberries. The farm has nine greenhouses, totaling roughly 18,000 sq. ft., three of which are devoted solely to tomatoes. Andrew will explain his tomato system, from grafting rootstock to buying bumblebee hives. Other topics of interest will include producing organic seedlings and their market, transplanting untreated corn, and general organic vegetable management. Contact: Brandon Shimoda (518) 271-0744

**July 10, 6:00 PM, Thursday: Tour of the Cecarelli Farm, Northford, CT.** Nelson Cecarelli grows 40-60 acres of sweet corn, plus a mix of lettuce, peas, beans, vine crops, cabbage, and solanaceous crops. He is transitioning from growing fruiting vegetables on bare-ground to using plastic mulch/trickle/raised beds, and has a new bed maker that

compensates for tractor slippage to keep the bed straight, even on side hills. This season he is using Perimeter Trap Cropping to protect his cabbage, cucumbers and summer squash and employs an IPM consultant to scout and monitor for pests on the farm. He recently bought a vegetable washer, built a loading dock, expanded his irrigation ponds, and surrounded a 45-acre field with a deer fence. Nelson will lead us on a tour of the farm and describe his crop production methods.

**Directions:** From the North: Go south on I-91 to Wallingford and take the E. Center Street Exit (for Rt. 150). At the top of the ramp, take a left onto E. Center St. and cross back over the highway. Go 0.6 miles and turn right onto Northford Rd. Go 2.2 miles to the stop sign at Rt 17. Go right on Rt. 17 for 0.2 miles and take your first right onto Old Post Rd. The farm is 2 mile up on the right. From the South: Go north on I-91 to Exit 8 (Rt 80 Exit). Take a left onto Rt. 17 (north) and proceed several miles to Northford town center (intersection of Rt. 22 and 17). Take a left at the second traffic light in the town center onto Rt. 22 and immediately (about 30 feet) take a right onto Old Post Road. The Cecarelli Farm is located on Old Post Road (bare right when the road forks), 0.8 miles north of the Northford town center. Contact: Dr. Mary Musgrave (860) 486-3435

**July 17, 6-8 PM, Thursday: A Thriving CSA With Strong Member Support.** Poughkeepsie Farm Project, Poughkeepsie, NY (Dutchess County). Hosts: Wendy & Asher Burkhart-Spiegel and Karen Nichols. The Poughkeepsie Farm Project provides an excellent example of a member-owned CSA committed to sustainable food production and outreach to the local community. Contact: Brandon Shimoda (518) 271-0744

**July 17, 6:00 PM, Thursday: UConn's Plant Science Research Farm, Storrs, CT.** Dr. Tom Morris (Soils Specialist) will talk about phosphorus use on vegetable farms. Dr. Frank Himmelstein (Field Crop IPM Coordinator) will show you the results of different herbicide combinations for sweet corn. Dr. Jude Boucher (Agricultural Educator/Commercial Vegetables), will walk you through experimental plots for a variety of cucurbit and solanaceous crops protected by Perimeter Trap Cropping (seeing is believing). Touring experimental plots allows you to observe the results of several different treatments in side-by-side comparisons.

**Directions:** From I-84, take exit 68 for Route 195 and proceed south to the University of Connecticut. Continue on Rt 195 through the campus and through the intersection with Rt 275 (South Eagleville Road). Turn left off of Rt 195, at the blue "A Plant Science Research Teaching Facility" sign (about 0.8 miles south of the Rt 275 intersection). The research farm is at the end of the road. Contact: Dr. Mary Musgrave (860) 486-3435

**July 24, 9:30 AM - #:00 PM, Thursday: New England Fruit Consultants 2003 Research & Demonstration Field Day and Massachusetts Fruit Growers' Association Annual Summer Meeting.** Please join us for an informative meeting to be held at one of the best tree fruit growing sites in the region. New England Fruit Consultants in collaboration with Apex Orchards will present the results of this year's field trials with various crop protection materials, growth regulators and other products that play an important role in crop production in New England. Pesticide license recertification credits (1.5) will be offered for attending the meeting. Lunch provided.

**For more information and to register by July 17, 2003:** 413-367-9578, [nefcon@aol.com](mailto:nefcon@aol.com), [www.umass.edu/fruitadvisor](http://www.umass.edu/fruitadvisor) and click on Summer Meeting.

#### **Mark your calendar for three more Extension Twilight meetings:**

**July 30, Wednesday:** UNH Vegetable/Berry Twilight Farm Meeting Roots & Fruits: hosted by David Craxton, farm owner Dalton, NH Contact: (603) 673-2510

**August 6, Wednesday:** Four Town Farm, Seekonk, MA

**August 13, Wednesday:** South Deerfield Research Farm, Field Day - with Trade Show and Local Foods Dinner!

---

*Massachusetts Berry Notes is a publication of the University of Massachusetts Extension Fruit Program which provides research based information on integrated management of soils, crops, pests and marketing on Massachusetts Farms. No product endorsements over like products are intended or implied.*