The New York Berry News

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What's Inside

Currant News & Events:

January 22-25, 2003: *North American Strawberry Growers Association Annual Meeting*, Puerto Vallarta, Mexico. Contact Erin Griebe at 810-229-9407. Email: NASGAHQ@aol.com.

January 29, 2003: *New York State Berry Growers Association Annual Meeting* (in conjunction w/ *NY Farmers Direct Marketing Association*) will be held at Sheraton Inn Conference Center in Saratoga Springs, NY. For more information or for registration materials contact the NY Farmers Direct Marketing Association at 315-475-1101. Or send inquiries to 7350 Collamer Road, East Syracuse, NY 13057.

February 18-19, 2003: *The Niagara Peninsula Fruit &Vegetable Growers' Association* and the *Ontario Horticultural Crops Conference* have joined together to bring you the Ontario Fruit & Vegetable Convention (OFVC), Brock University, St Catharines. Theme "Growing Together". Contacts: Chairman: Tony Sgambelluri - 905-945-1713 (Cell 905-651-1264); Vice Chair: Bob Cobbledick - 905-945-9057; Trade Show Chairmen: Ross Parker - 905-562-4136 and Ralph Troup - 905-563-826

— Strawberry —

The dry weather across western New York State is beginning to break. However, we haven't had enough rain where we can safely put away irrigation equipment. It is important to keep strawberry plants well-watered during the latter part of summer for flower bud development and so they can actively compete against invading weeds. Which brings me to the next topic; weed management. Admittedly, it can be very difficult to stay ahead of the weeds, but I can assure you will be rewarded next spring with a few weeks of effort throughout the summer and fall months. In this issue of the NYBN Courtney Weber will discuss fall weed management in strawberries and brambles.

This is normally the time of year when you would begin to notice the foliar diseases leaf blight, leaf spot, and leaf scorch, particularly in older plantings (you may, however, be noticing powdery mildew instead; the dry summer is perfect for the development of this disease). However, the dry weather has kept these diseases in check. As the autumn rains begin, keep an eye on these diseases, as they can move thorough a planting fairly quickly if conditions turn wet. Nova 40W is labeled for control of leaf blight, leaf spot and powdery mildew on strawberry. An application may be necessary if conditions favor their development.

In fields where red stele is a problem, it is getting close to the time where Ridomil Gold or Aliette should be applied. In this months NYBN, Mike Celetti of the University of Guelph will discuss managing *Phytophthora* diseases in berries.

— Raspberry —

Fall bearing raspberries are beginning to wind down. However, the rains showers have spurred some gray mold activity. Both Rovral and Elevate

are labeled on raspberry and can be used to reduce spread of the disease on fruit. You may also be noticing raspberry leaf spot. In severe cases, this disease can cause extensive defoliation so it is important to keep the disease in check. Nova 40W is labeled for raspberry leaf spot and can be applied to fall bearing raspberries. This is also the time of year when you should begin to prune out spent floricanes. This is particularly important if cane diseases such as anthracnose, cane blight, or spur blight were present. Diseased canes should be pruned out preferentially and destroyed. If the prunings are left near a planting they can reinfect the planting again next season.

Tarnished plant bug continues to represent a threat on fall bearing raspberries, as are cane borer and picnic beetles. Also keep an eye out for symptoms of feeding by potato leafhopper. The greenish adult hoppers inject toxins into leaves as they feed, sometimes causing leaves to curl and to reduce shoot growth. The adult raspberry crown borer makes its appearance in late July and August. 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. In late August or early September keep an eye out for injury on canes originating from egg laying activity of tree crickets. The female inserts eggs in canes, leaving long rows of punctures that can weaken the cane.

— Blueberry —

Blueberry plants infected with blueberry stunt will be showing symptoms by now. This is an important disease of blueberry and is covered in greater detail below.

Fall Weed Management for Strawberries

Courtney Weber, Dept. of Horticultural Science, Cornell University, Geneva, NY

Weed control in strawberries continues to be one of the biggest challenges to growing strawberries in the matted row system in this region. At this time of the year, hand weeding and hoeing is needed to keep hot spots under control until late fall or winter application of herbicide and straw.

Gramoxone can be used now while weeds are actively growing with shielded sprayers for burn down of annuals between rows but will not generally control perennial weeds. Be careful with this one, as it is as toxic to people as it is to plants. Oxalis, quack grass, bindweed, pigweed, and purslane can all be a problem after renovation and can grow and produce seed well into November. Winter annuals such as chickweed and shepherds purse can also cause problems and wheat or rye seed from the straw mulch may need control.

Fall herbicide applications should wait until the strawberry plants are dormant. This generally means several hard freezes and consistently low temperatures. Herbicide options in the fall include 2,4-D, Devrinol, and Sinbar and all are applied to dormant fields. 2,4-D helps cleanup broadleaf perennials but must not be applied too early as strawberry is a broadleaf perennial and will die if this herbicide is actively taken up.

Devrinol is a good preemergent herbicide and can be applied under the straw for spring weed control. The straw protects this herbicide from being neutralized by sunlight. Sinbar is also an effective preemergent herbicide that can be applied under the straw but is not as persistent and is best applied in the spring after straw removal while plants are still dormant. It needs to be washed into the soil and off the strawberry plants and you must be aware that many strawberry varieties are sensitive to Sinbar.

Knowing your straw supplier is a good way to ensure weed seed free straw, which eliminates many weed problems. Straw mulch application serves multiple purposes including winter/cold protection, weed control, and keeping berries off the ground. Straw should be applied in very late fall to winter and often not until January. Application before full dormancy can interfere with acclimation of the plants and make them more cold susceptible. It can also decrease nutrient reserves and reduce future yields. Straw should be applied in a solid mat 3-5 inches deep using up to 3 tons or 300 bales per acre. This will provide excellent protection in for the winter and good weed control between rows in the spring. A year round program of weed control is necessary to maintain a weed free planting and ensures healthy yields.

Fall Weed Management for Brambles

Courtney Weber, Dept. of Horticultural Science, Cornell University, Geneva, NY

Summer brambles are often pushed to the background during the fall as so many other crops demand attention in this busy season, but weed

problems requires year round vigilance. In bramble plantings, maintaining weed free aisles through permanent sods or cover crops is the best way to reduce you weed load within the row as well. If not done already, now is the time to be planting the aisles. For a permanent sod, a companion grass mixture is probably the best bet. A mixture of fine-leaf fescues, perennial ryegrasses, or bluegrass forms a thick sod, which holds up to traffic and needs infrequent mowing. Be sure the seed mix does not contain a broadleaf herbicide such as 2,4-D because brambles are very sensitive. Once established, be sure to prevent the grass from spreading into the row with by banding grass-selective herbicides in the spring.

For row centers maintained as bare earth, a fall cover crop can reduce weed load and add organic matter to the soil. Cover crops compete with fall germinating weed seeds and reduce erosion over the winter. They also act as mulch in the spring, which retains moisture and smothers germinating weeds. Buckwheat, oats, or rye can be fall planted and either die in the winter or can be mowed or sprayed in the spring. Deep tillage is to be avoided as raspberry roots can be damaged and weed seeds will be uncovered. Once the aisles are taken care of, it is time to consider herbicides to control winter annuals and spring weeds.

Late fall is a good time for herbicide applications in brambles. Casaron is probably the most effective option. However, it is expensive and can be difficult to apply. It is a fine granular formulation and care needs to be taken to ensure even coverage within the row. A Casaron specific spreader or hand spreading on a wind free day is recommended. Application should not be done until daytime temperatures are below 45˚F in late fall or winter. Casoron can be used in conjunction with Devrinol and Princep in late fall or spring to provide very good weed control. Devrinol can be applied in late fall or early spring and needs to be washed in within 24 hours as sunlight will break it down. It is a preemergent herbicide and works on germinating seeds. Princep is effective at a single high rate for quack grass in the fall or the application can be split between the fall and spring at a lower rate for other weeds. Princep should not be used on plantings less than 6 months old, tissue culture plants less than 1 year old, or the variety 'Royalty'. Other herbicides available for fall application are Solicam, Surflan, and Sinbar but are not commonly used due to expense and variety sensitivity.

A weed management program that anticipates problems helps to avoid emergencies during the season and ensures a long life for bramble plantings. Effective weed control in brambles is possible without undue hand weeding but requires vigilance throughout the year.

(Photographs courtesy of Dr. John Meade, Rutgers University. These can also be viewed at: www.rce.rutgers.edu/weeds/)

Fall Weed Management for Blueberry

Caleb Torrice, Entrepreneur.

There are two strategies for fall weed control. They should be alternated with each other to prevent the buildup of herbicide resistance in weeds. The first strategy is a mixture of 2.5 lb/A of Princep 80WP plus either (A) 5 lb/A of Surflan, (B) 8 lb/A of Devrinol, (C) 2-4 lb/A of Kerb, or 2 lb/A Sinbar. Surflan is not

recommended on high organic matter soils. Kerb is useful for quackgrass control. Solicam is labeled and could technically be a fifth option to mix with Princep but it is expensive and injury is more likely to occur. During the planting year, wait at least until the soil is well settled around the plants before applying herbicides. Devrinol and Surflan are good safe options. Use a low rate of Princep the first year, and don't use any Sinbar.

The second strategy that should be part of your weed control rotation is 100-150 lb/A (1.5-2.25 oz/plant) of Casoron. Casoron is a granular that must be spread evenly. A hand-crank granular spreader works well. DeCran Ag Supplies sells a hand-crank spreaders (508) 295-2731. For larger acreage, perhaps the thing to do is rig up a Gandy-type box on the back of an ATV or tractor. Casoron is expensive and should be applies between October and April; March is best if the snow has melted, the soil isn't frozen and the temperature is below 40 F.

Along with the fall pre-emergent weed control program, a fall touch-up of Roundup is effective if quackgrass, goldenrod or other perennial weeds are a problem. It should be applied when 90% of the leaves are off the blueberry plants, but before the first heavy frost. (*Source:* Blueberry Production Summary, 2002. Oswego County CCE)

Blueberry Stunt & Leafhoppers

Dr. Gary C. Pavlis, County Agricultural Agent, Rutgers University

Leafhoppers and blueberry stunt become problematic each year in August and September. Stunt disease is caused by a phytoplasma. Phytoplasmas are microscopic organisms that have no definite shape, unlike uniformly shaped types of bacteria or viruses. The phytoplasma of stunt disease live mostly in the transport tissues of the plant, primarily in the phloem.

Figure 1. The sharp-nosed leaf hopper

Leafhoppers of many species feed on plants by piercing the surface of leaves or stems and sucking juices from the phloem tissues. Any leafhopper feeding in the phloem of a stunt-infected blueberry plant has the potential to pick up some stunt phytoplasma in its meal. Fortunately, only one species of leafhopper is known to be able to harbor these phytoplasma's in its body and transmit them to other plants. This is the blueberry sharp-nosed leafhopper, *Scaphytopius magdalensis*. This leafhopper feeds and reproduces on a relatively wide range of blueberry cultivars and on wild blueberry which grows nearly everywhere in the pinelands of New Jersey. Sharp-nosed leafhoppers are not a pest unless the following steps are completed: 1) They must feed on stunt-infected plants. 2) They must move to healthy plants. 3) They must feed long enough to transmit the phytoplasma to the plants. Stunt disease will spread quickly if these three steps are favored by the particular situation in a blueberry field. Disrupting any of these steps to a sufficient degree can reduce the spread of stunt disease.

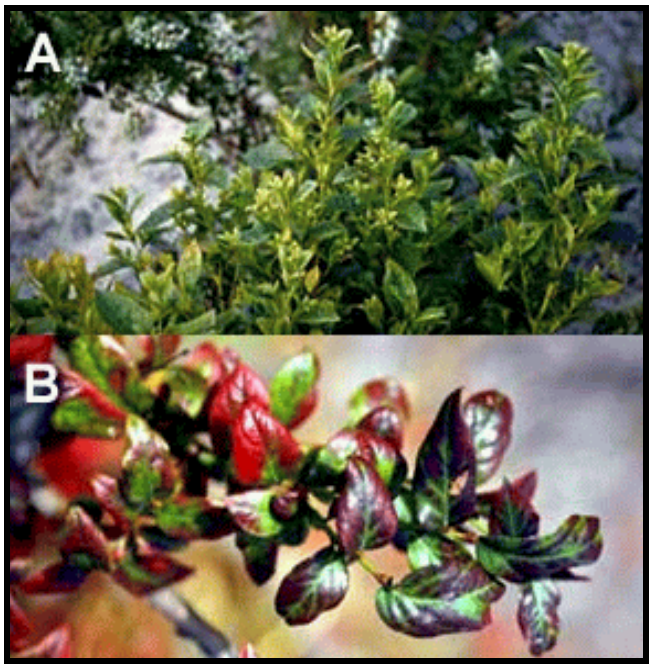

Figure 2. Symptoms of blueberry stunt in spring (A) and autumn (B).

Of course, getting rid of all leaf-hoppers in an area would halt the spread of stunt disease. This is a very impractical solution, since the wild blueberry plants in our area provide for a large population of leafhoppers in the areas around our cultivates fields. We can't control the development of these populations, so we must defend our cultivated plantings from them. We do this with insecticide treatments, made during the periods when adult leafhoppers are active. Only adult leafhoppers have wings and the ability to move great distances, so these are the real pests in the stunt disease problem.

Pesticides can affect only the second and third steps of stunt disease spread listed above. Leafhoppers are either killed before they reach healthy plants or they die before feeding long enough to transmit the phytoplasma

to a new plant. Errors in detecting the presence of adult leafhoppers and problems with the timing of pesticide treatments make it difficult to achieve 100 percent stunt control by chemicals alone.

This is why roguing of disease bushes provides an important factor in stunt disease control. Stunted bushes are easy to find especially when symptoms become bold in the fall. Attacking the stunt disease transmission cycle at steps one, by the removal of infected plants, is both simple and very effective.

Remember that it is highly recommended to spray stunt-infected plants with a short residual insecticide like Sevin or Malathion before the plant is removed. This will keep any phytoplasma carrying leafhoppers on the infected plant from dispersing to healthy plants when the infected bush is disturbed during removal. (*Source:* The Blueberry Bulletin, Vol 18. No 20; Photographs courtesy of Marvin Pritts)

Gooseberries and Red Currants: Cordon Training for Fresh Fruit Production

Steven A. McKay, Extension Educator, Cornell Cooperative Extension of Columbia County, Hudson, NY

This article is based on observations made while in Europe during summer, 2002, and much appreciated discussion with Adri van Eck, DLV in Holland, and Jim Arbury, RHS Wisley Gardens in England. I have begun trials of cordon-trained plants in New York, and will report on their success in coming years.

Cordon training of Ribes plants whose fruit is intended for the fresh market is standard practice for growers in Holland. The practice has also been popular in England for hobby and display gardens, with some difference from the Dutch system. The basic idea of the system is that one to three trunks (vertical cordons) per plant are developed and trained to stakes vertically. Pruning removes old and excess wood in order to renew the fruiting structures of the plant. Plants are opened up to provide better access to fruit, and better ventilation, light, and spray penetration. Quality and size of fruit can be improved, and labor for picking is reduced.

Red Currants

In Holland, red currants are planted about ½ meter apart. Three branches are selected as cordons, and trained up bamboo stakes spaced at the center of the plant, and about fifteen centimeters on each side. The cordons are encouraged to grow to a height of five to six feet. A spare branch is left at the base of the plant each year as insurance in case any of the cordons die and need replacement. During the same year, right after fruiting, the year-old branches that bore fruit are removed. Very small branches and misplaced or crowding branches are removed, leaving medium-sized branches that will bear fruit the next season. This way, a plant is completely renewed (except the cordon) on an annual basis.

In England, semi-permanent branches are selected evenly spaced along the cordon. In late June each year, undesirably placed and crowding branches are removed leaving five to seven bud branches for the rest of the growing season. The five bud branches are shortened to two bud fruiting spurs during dormant season pruning.

Gooseberries

Gooseberries can be very difficult to harvest if they are a thorny variety. Cordon training offers the advantage of opening up the plant and leaving fruit accessible. In Holland, a single branch is chosen and trained up a stake to a height of five to six feet. Only new, well spaced, medium-sized branches are left at the end of the growing season. Poorly spaced, small branches, and branches that bore fruit are removed. In England, cordoned gooseberries are trained the same way they train cordoned red currants.

Trellising System

I have found that the conduit used for training apples to the vertical axis system are good for a ribes trellis. Ideally, posts would be about two meters long with about thirty centimeters pounded into the ground, and a hole drilled about four centimeters from the top. The posts could be spaced six to eight feet apart, with a number fourteen or twelve wire passed through the holes at the top of the stakes. At each end of the trellis, a conduit anchor post can be driven in, and the wire attached through a hole drilled near the top of the post. Six foot bamboo posts are then spaced as needed along the wire, pushed in a couple of inches, and tied at the top. Green horticultural tape can be used to tie trunks to the posts.

Conversion of Bushes to Cordons

Bushes can easily be converted to cordons by selecting three young to medium-aged branches (one in the case of gooseberries) to become cordons. If spacing is too wide between plants, cuttings can be taken and stuck between older plants (best done Sept.15-Oct. 15 in the Northeast US) to develop new plants. Older plants will become adapted within one growing season.

Advantages and Disadvantages Summarized

Advantages:

1. Plants are opened up for better air circulation, spray coverage, and harvesting.
2. Fruit quality is improved in terms of size, color, and lack of rubbing injury.
3. Pruning is simplified over bush systems, because

one can see easier what to cut.
4. The plant's cordon or support system does not constantly need to be renewed as with the bush system. (The trunk, or cordon is relatively permanent, while branches in plants are renewed every three to five years.)

Disadvantages:

1. The system is more costly to establish.
2. Cordons can die out and need replacement.

Cultural Practices for Managing Diseases of Berry Crops

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

Managing plant diseases effectively requires an integration of management practices. In the grand scheme of disease management most management practices can be classified as either a 1) regulatory procedure, 2) avoidance mechanism, 3) physical method, 4) biological and chemical control, 5) host resistance, or 6) cultural methods. Regulatory procedures generally refer to plant quarantines and inspections and are used to keep pathogens out of an area or region where it does not exist. Plant certification (e.g., virus certification) is also a regulatory practice. Avoidance refers to planting a crop in area where the disease is absent or during periods when the pathogen is inactive. Avoidance is a practice used commonly in nursery and seed production. Physical methods are typically applied pre-planting or post harvest. Pre-planting examples include heat treating seed or propagation material to eliminate systemic infections or surface contaminants. Refrigeration to retard the growth of a pathogen in the harvested fruit is a widely practiced postharvest procedure (e.g., gray mold).

Biological and particularly chemical control (i.e., fungicides) are almost always necessary to manage disease in commercial berry fruit production. Although the use of fungicides are quite effective in controlling disease, they are typically the method of last resort. This is partly because the regular application of fungicides is costly and, secondly, fungicide usage can be perceived negatively by the public; a particular concern for PYO operations. The reliance on fungicides can sometimes be reduced through the use of resistant varieties. It is important to realize, however, that resistance is a relative term and that resistant varieties are often affected by the disease to which they are resistant (i.e, resistance is not equivalent to immunity). Or, as is often the case, a variety may be resistant to one disease but susceptible to others that in turn require some level of chemical control. Moreover, host resistance may not be an option because the resistant variety may be commercially unacceptable. The bottom line is that resistance does not completely eliminate the need for chemical control.

Cultural or non-chemical practices are often key to reducing disease pressure and the reliance on chemical control. Some cultural practices focus on reducing inoculum through the removal of diseased or senescent tissue or by placing a barrier (such as a mulch) between the pathogen (e.g., a mummy) and the soil that it must contact with to complete the disease cycle. Others practices focus on creating conditions unfavorable for the development of the disease or dispersal of the pathogen. Some examples include improving canopy air circulation though pruning and the manipulation of canopy architecture to promote quicker drying of leaf surfaces, the use of straw mulch to dampen splashing by rain and irrigation water to reduce the dissemination of splashed-dispersed pathogens, and site selection or the installation of drainage tiles and ditches to prevent standing water which encourages the development *Phytophthora* diseases.

Some cultural practices are used routinely in commercial production, while others, unfortunately, are rarely used. There are a number of reasons why the latter is true. The two most common are: 1) They are too time consuming to implement for the added level of disease control; and 2) They are not necessary because excellent control can be achieved with fungicides alone. Both are valid arguments. However, if a cultural practice can eliminate only one fungicide application, chances are that the costs of implementing the cultural practice has been recovered. Fewer fungicide applications also helps to preserve the efficacy of some fungicides, that is, cultural practices help in managing fungicide resistance. And, using a practice that reduces fungicide usage is considered a mark of good stewardship by some customers.

The following are cultural practices that have proven tried and true over the years. Some, as mentioned above, are considered general practice in commercial berry production. Others are used less frequently, probably more often by organic growers.

Strawberry

1) Straw mulch for control of leather rot and anthracnose. Several studies have demonstrated that the spread of these two splash-dispersed pathogens can be reduced significantly by laying a heavy layer of straw mulch in the row middles and between plants.

2) Plant population and canopy management for leaf disease and fruit rots. Because prolonged wetting events significantly increases the risk of infection, any practice that promotes good air circulation to facilitate rapid drying can diminish the amount of infection. This includes proper plant spacing within and between rows and weed control.

3) Removal of dead and rotting tissue from the planting. It is these rotting tissues where several pathogens survive the winter and produce their initial spores in spring. This includes gray mold, anthracnose, and several foliar diseases.

Raspberry

1) Raised beds for *Phytophthora* control. Planting on raised beds, berms or ridges is highly recommended practice for raspberries (and strawberries if a red stele susceptible variety is planted) because it raises the crowns of the plant above the portion of soil where pathogen activity is the greatest. For example, in a berm that stands 4 inches above ground level, fungal activity is reduce 90%; at 10 inches above ground level the fungus is virtually inactive.

2) Pruning and removing/burning diseased canes. Because of the limited number of fungicides labeled on raspberry, this practice is almost essential to managing anthracnose, cane blight, and spur blight. All three diseases survive the winter in infected canes. If diseased canes are not pruned out, removed from the planting and burned or destroyed, they will produce spores to infect primocanes next spring.

3) Plant population and canopy management for leaf disease and fruit rots. See above.

Blueberry

1) Roguing virus-infected plants (blueberry stunt). There are many viral diseases that affect blueberry. Although certification programs ensure the purchase of virus free plants, they are only partially effective against endemic viruses that are vectored by insect. A primary control procedure is to remove and destroy infected plants. This eliminates the reservoir from which insects can acquire the disease and spread it to uninfected plants.

2) Pruning and removing/burning diseased canes. Phomopsis and Fusicoccum blighted canes should be pruned, removed from the planting, and burned or destroyed.

2) Sweeping under bushes to get rid of mummified berries. Mummy berry can be a difficult disease to control even under the best management practices. The disease is managed more easily if the primary source of spores is eliminated or disrupted. This can be accomplished by raking or discing the soil beneath the blueberry bushes or covering the fallen mummyberries with a 3-4 inch layer of mulch. The formation of apotehecia (the fungal body where spores are produced) is greatly enhanced when the mummies make physical contact with the soil. Burying these mummies disrupts their formation.

Phytophthora Root Diseases of Berry Crops

Michael Celetti, Plant Pathologist, Horticultural Crops, University of Guelph, Guelph, Ontario

The wet and cool conditions experienced this spring were ideal for infection and development of berry crops by the soilborne pathogens *Phytophthora spp*. Red stele of strawberries and Phytophthora root rot of raspberries are two diseases that thrive in wet, cool soil.

Phytophthora spp. are sometimes referred to as water molds, however they are not classified in the "Mold" family. They survive as resistant oospores (persistent sexual resting spores) in soil for long periods or as mycelium (mold) in recently infected plant debris. During favorable conditions, the mycelium and oospores germinate to produce a structure called a sporangium. Under moist but not wet conditions, roots can become infected if they come in contact with the sporangium. However, when soils become saturated for a sustained period of time (30 minutes to 6 hours), sporangium produce and release many zoospores with tails that swim toward and infect the root tips of berry plants. This is why plants growing in poorly drained; heavy, wet soils are at more risk of becoming infected by *Phytophthora* spp.

Berry plants infected with *Phytophthora* frequently appear stunted during the second or third year of growth and occur in patches. They wilt very quickly under hot weather conditions. Symptoms are first noticed in low areas of a field or row where water accumulates for extended periods after irrigation or a heavy rain. Eventually the disease moves along the row from the initially infected plants.

It is relatively easy to diagnose red stele by digging up the roots of infected strawberry plants and slicing them longitudinally. The vascular tissue (sometimes called the stele) of infected roots will appear blood red surrounded by white cortex tissue hence the name "red stele". The secondary roots are often pruned significantly giving the root system a "rat tail" appearance. Healthy roots should appear white throughout were as other root diseases such as black root rot or Verticillium wilt will not reveal the blood red core.

Raspberry plants infected with Phytophthora root rot may be a little more difficult to diagnose. Infected plants produce few primocanes. The few floricanes and primocanes produced often appear wilted with leaves looking scorched along the margins, between veins. Eventually the leaves turn completely yellow as the disease progresses over the seasons. Scraping the epidermis of infected raspberry roots will reveal a reddish-brown tissue with a distinct margin where it

meets the healthy white tissue. This reddish-brown tissue may also extend into the crown.

[***Editor's note***: The management section of this article has been replaced with New York guidelines by the editor and focuses on autumn practices]

On strawberry, Ridomil Gold (mefanoxem) 4EC (1 pt/treated acre) and Aliette (fosetyl-Al) 80WDG (2.5-5 lb/A) are labeled for control. However, neither will be completely effective if susceptible varieties are grown in wet soils. The application of both fungicides should be confined to areas of the field where disease occurs or is suspected. Ridomil Gold should be applied in September or early October after the soil begins to cool but before heavy rain fall begins. A second application can be made in Spring after the ground thaws but before bloom. Ridomil can be banded over the row and should provide the same level of protection for red stele as a broadcast application. Broadcasting, however, may provide better control of leather rot. Aliette should be applied in early fall when the weather turns cold and wet and can be applied 30 days later.

On Raspberry, Ridomil Gold 4EC (4 fl oz/1000 ft of row) and Aliette 80WDG (5 lb/A) are labeled for control. Ridomil Gold tends to be more effective than Aliette. Like strawberry, neither fungicide will be completely effective if susceptible varieties are grown in wet soils. Ridomil Gold should be applied only to portions of the planting where the disease has been diagnosed or is suspected. Ridomil Gold should be applied as a 3-foot-wide band over the affected row in early fall and again in late spring. Moreover, Ridomil Gold is also recommended as a preventative treatment for new Titan plantings except for those on the very well-drained soils. (*Source*: The All Ontario Berry Grower, Volume 8, August 2002)

How Farmers Can Conserve Water

S DeGray & R. Hazzard, Adapted from Rutgers Coop. Ext. Org. Farming Edition 8/20/0 2, with input from D. Johnson, MA. NRCS Office

[Edited (i.e., shortened) by Bill Turechek]

Once planted, crops need the right amount of water, at the right times, for successfully harvesting acceptable yields and quality. Water conservation is always a good stewardship practice. However, water management is even more critical during drought emergencies. This year's drought conditions only serve to emphasize how critical water management is for the success of fruit and vegetable farms.

Water should only be used when necessary and in amounts that sustain plant growth without loss of yield. Irrigation system evaluations are always recommended to improve and maintain system efficiency for sustainable crop yields. The following are some assessments and low cost actions farmers can take to conserve water and reduce waste in the short term:

- ✓ Frequently check all system components for visible signs of leaks or damage and make repairs accordingly. Carry out regular maintenance on pumps and power units and evaluate irrigation system efficiency and uniformity by measuring flow rates and pressure.
- ✓ Irrigate in the early morning or evening. Avoid the use of overhead irrigation during the hottest or windy hours of the day.
- ✓ Irrigate less frequently where feasible. This may encourage deeper root system growth - using water from deeper soil layers that would otherwise be lost to deep percolation. (Currently, given shortages of water sources, this may be a necessity, not a choice.)
- ✓ Do not over irrigate. Excess water will run off or percolate beyond the root zone.
- ✓ Take extra caution not to irrigate non-target areas, particularly roads and pavements. Use part circle sprinklers on field ends or stop the traveler before it reaches the road.

(*Source:* Vegetable IPM Newsletter, August 22, 2002, Vol. 13, No. 17 via Massachusetts Berry Notes August, 2002, Vol. 14, No. 15)

Approximate Run Times for Sprinkler Systems

Mary Beth Sorrentino, USDA Natural Resource Conservation Service.

During drought, growers must irrigate to supply crop needs, while also conserving water by avoiding runoff and/or deep percolation. This article assists in deciding when to begin irrigation and provides approximate run-times for integrated water management.

Recommendations for Irrigation Scheduling

- ✓ Monitor soil moisture using tensiometers or watermark sensors placed in the crop root zone, or estimate using USDA-NRCS booklet, Estimating Soil Moisture by Feel and Appearance, available from your local NRCS office.
- ✓ Start irrigation no later than 50% moisture depletion (Table 3) in the effective root zone depth.

✓ Available soil water and maximum rates are affected by soil texture. Adjust run time hours listed in Table 1 to apply more or less then 1" application based on soil texture and available water holding capacity. Do not exceed rates in Table 2.

Irrigation Frequency for 1" Application

Based on Et rates of 0.2"/day during the peak growing season, and no rainfall, apply 1" every 5 days.

Table 1. Rates of application (inches/hr) and hours of run time for a 1" net depth of application at 75% system efficiency. Interpolate run times and application rates for different nozzle flow rates.

	Nozzle Flow Rate		
Sprinkler	**3GPM**	**5GPM**	**10GPM**
40'X40'	.18"/h-7h	.3"/h-4h	.6"/h-2h
40'X50'	.14"/h-9h	.24"/h-5.5h	.5"/h-2.5h
40'X60'	.12"/h-11h	.2"/h-7h	.4"/h-3h
50'X50'	.11"/h-12h	.19"/h-7h	.38"/h-3.5
50'X50'	.11"/h-12h	.19"/h-7h	.38"/h-3.5h
50'X60'	.09"/h-15h	.16"/h-8h	.32"/h-4h
55'X65'	.08"/h-17h	.13"/h-10h	.27"/h-5h

Table 2. Maximum application rates by soil texture. Do not exceed the maximum application rates to avoid runoff and/or deep percolation loses.

Sand	1"/hour
Loamy Sand	.7"/hour
Sandy Loam	.5"/hour
Loam	.4"/hour
Silt Loam	.3"/hour

Table 3. Approximate Tensiometer Readings in Centibars (CB) at 50% Moisture Depletion.

Sand	20CB
Loamy Sand	25CB
Sandy Loam	40CB
Loam	65CB
Silt Loam	90CB

(*Source:* Vegetable IPM Newsletter, August 22, 2002, Vol. 13, No. 17 via Massachusetts Berry Notes August, 2002, Vol. 14, No. 15)

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

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

Questions or Comments about the New York Berry News?

Send inquiries to:

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WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, AUGUST 18th, 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	96	66	82	12	223	2118	279	1.53	0.72	15.07	-0.15
Glens Falls	94	57	77	10	191	1789	178	0.28	-0.56	15.02	0.21
Poughkeepsie	93	60	78	8	199	2014	93	0.07	-0.74	20.44	2.74
Mohawk Valley											
Utica	97	62	79	12	207	1884	214	0.9	0.06	22.08	4.83
Champlain Valley											
Plattsburg	94	61	77	10	188	1716	77	0.1	-0.88	17.69	3.52
St. Lawrence Valley											
Canton	92	63	79	13	201	1718	254	0.31	-0.65	17.92	3.08
Massena	95	61	77	11	191	1655	107	0.13	-0.71	17.74	4.14
Great Lakes											
Buffalo	90	65	79	10	201	1994	240	1.12	0.14	15.43	0.43
Colden	91	60	76	11	185	1630	204	0.88	-0.03	13.61	-3.72
Niagara Falls	92	67	80	11	209	1963	200	0.31	-0.59	14.38	-0.13
Rochester	97	66	81	13	218	2124	425	0.57	-0.2	15.84	2.87
Watertown	94	56	77	11	194	1694	216	0.73	-0.02	14.52	2.93
Central Lakes											
Dansville	95	54	77	9	189	1931	224	0.62	-0.09	15.17	0.82
Geneva	96	61	79	10	202	1925	233	0.34	-0.36	14.96	0.68
Honeoye	94	56	78	9	196	1834	74	1.02	0.29	16.54	2.44
Ithaca	95	60	78	11	197	1806	272	0.09	-0.68	17.55	2.13
Penn Yan	97	64	80	12	214	2047	355	0.37	-0.33	12.13	-2.15
Syracuse	101	64	82	14	224	2147	424	0.07	-0.7	17.95	1.75
Warsaw	89	64	75	11	177	1611	284	0.65	-0.22	21.42	4.7
Western Plateau											
Alfred	93	53	74	9	171	1736	334	0.28	-0.42	18.03	1.53
Elmira	98	56	77	10	194	1898	273	0	-0.66	16.67	1.9
Franklinville	90	53	73	9	160	1506	310	1.14	0.23	20.51	3.58
Sinclairville	88	64	745	10	177	1684	341	2.56	1.56	21.46	2.63
Eastern Plateau											
Binghamton	95	64	79	12	204	1827	249	0	-0.76	17.95	2.43
Cobleskille	94	60	78	13	200	1796	330	0.97	0.2	16.47	-0.15
Morrisville	91	60	76	10	181	1584	186	0.65	-0.13	19.59	3.17
Norwich	96	53	77	11	187	1719	251	0.14	-0.63	18.56	2.07
Oneonta	96	56	79	14	197	1881	524	0.64	-0.2	20.66	2.6
Coastal											
Bridgehampton	95	67	81	10	216	2030	278	0	-0.77	14.56	-1.74
New York	97	74	86	11	252	2799	423	0	-0.84	13.85	-3.59

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, AUGUST 25th, 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	92	54	70	2	140	2258	289	0.96	0.17	16.03	0.02
Glens Falls	90	49	66	0	116	1905	179	0.87	0.03	15.89	0.24
Poughkeepsie	92	56	69	-1	135	2149	90	1.5	0.73	21.94	3.47
Mohawk Valley											
Utica	89	53	68	2	129	2013	223	3.91	3.03	25.99	7.86
Champlain Valley											
Plattsburg	91	48	66	-1	111	1827	75	0.43	-0.54	18.12	2.98
St. Lawrence Valley											
Canton	86	48	65	0	105	1823	253	0.84	-0.14	18.76	2.94
Massena	88	46	65	-2	105	1760	104	0.53	-0.32	18.27	3.82
Great Lakes											
Buffalo	83	55	70	2	139	2133	253	0.65	-0.33	16.08	0.1
Colden	83	51	67	2	119	1749	217	1.07	0.09	14.68	-3.63
Niagara Falls	84	50	69	1	132	2095	206	0.34	-0.57	14.72	-0.7
Rochester	87	54	71	4	148	2272	453	0.21	-0.6	16.05	2.27
Watertown	83	49	66	1	114	1808	219	0.45	-0.35	14.97	2.58
Central Lakes											
Dansville	87	49	68	1	128	2059	229	1.17	0.4	16.34	1.22
Geneva	87	52	69	2	134	2059	244	0.77	0.04	15.73	0.72
Honeoye	85	46	67	-2	122	1956	66	1.16	0.39	17.7	2.83
Ithaca	90	48	69	4	134	1940	294	1.89	1.12	19.44	3.25
Penn Yan	91	54	71	4	149	2196	381	0.97	0.24	13.1	-1.91
Syracuse	91	56	71	4	147	2294	449	2.36	1.56	20.31	3.31
Warsaw	82	49	66	3	111	1722	299	1.09	0.18	22.51	4.88
Western Plateau											
Alfred	87	41	65	1	106	1842	339	1.45	0.75	19.48	2.28
Elmira	93	46	70	4	143	2041	300	1.19	0.49	17.86	2.39
Franklinville	82	45	64	2	101	1607	322	1.25	0.34	21.76	3.92
Sinclairville	82	52	66	2	111	1795	352	0.96	-0.09	22.42	2.54
Eastern Plateau											
Binghamton	90	53	70	4	140	1967	275	1.25	0.48	19.2	2.91
Cobleskille	89	50	67	3	123	1919	345	1.59	0.79	18.06	0.64
Morrisville	85	46	66	2	112	1696	196	1.86	1.02	21.45	4.19
Norwich	92	51	69	5	134	1853	277	1.31	0.54	19.87	2.61
Oneonta	90	51	70	6	140	2021	566	1.13	0.29	21.79	2.89
Coastal											
Bridgehampton	95	56	73	3	163	2193	298	0.43	-0.38	14.99	-2.12
New York	95	65	77	4	192	2991	443	1.41	0.57	15.26	-3.02

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WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, SEPTEMBER 1st, 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	82	54	66	-2	111	2369	283	1.08	0.31	17.11	0.33
Glens Falls	80	46	63	-3	89	1994	168	0.4	-0.43	16.29	-0.19
Poughkeepsie	80	54	64	-4	101	2250	66	1.99	1.17	23.93	4.64
Mohawk Valley											
Utica	79	50	65	-2	103	2116	219	0.03	-0.92	26.02	6.94
Champlain Valley											
Plattsburg	86	45	64	0	101	1928	76	0.13	-0.77	18.25	2.21
St. Lawrence Valley											
Canton	84	42	63	-1	92	1915	252	0.09	-0.89	18.85	2.05
Massena	81	44	63	-1	93	1853	104	0	-0.91	18.27	2.91
Great Lakes											
Buffalo	84	52	69	3	133	2266	270	0	-0.96	16.08	-0.86
Colden	82	49	65	2	106	1855	228	0	-1.05	14.68	-4.68
Niagara Falls	87	50	69	3	134	2229	225	0	-0.94	14.72	-1.64
Rochester	87	50	68	2	125	2397	468	0	-0.77	16.05	1.5
Watertown	84	45	64	1	103	1911	223	0	-0.84	14.97	1.74
Central Lakes											
Dansville	82	49	64	-3	102	2161	218	0	-0.77	16.34	0.45
Geneva	83	50	66	-1	110	2169	242	0	-0.77	15.73	-0.05
Honeoye	83	44	64	-5	96	2052	42	0	-0.77	17.7	2.06
Ithaca	81	50	64	-1	99	2039	291	0.02	-0.79	19.46	2.46
Penn Yan	85	49	67	0	117	2313	386	0.02	-0.75	13.12	-2.66
Syracuse	84	53	68	2	125	2419	462	0	-0.84	20.31	2.47
Warsaw	82	49	64	2	101	1823	315	0	-0.94	22.51	3.94
Western Plateau											
Alfred	81	41	61	-3	82	1924	331	0	-0.75	19.48	1.53
Elmira	84	49	65	-1	107	2148	301	0.02	-0.68	17.88	1.71
Franklinville	79	46	61	-1	77	1684	320	0	-0.94	21.76	2.98
Sinclairville	78	45	63	0	94	1889	357	0.02	-1.07	22.44	1.47
Eastern Plateau											
Binghamton	79	52	64	-2	98	2065	271	0.12	-0.65	19.32	2.26
Cobleskille	79	49	63	-2	89	2008	339	0.57	-0.27	18.63	0.37
Morrisville	80	48	62	-1	89	1785	195	0.07	-0.81	21.52	3.38
Norwich	82	50	65	2	107	1960	289	0.15	-0.69	20.02	1.92
Oneonta	80	51	64	2	101	2122	580	0.75	-0.09	22.54	2.8
Coastal											
Bridgehampton	87	57	69	0	134	2327	300	1.87	1.03	16.86	-1.09
New York	88	60	72	-2	154	3145	435	2.6	1.76	17.86	-1.26

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WEATHER REPORTS OF TEMPERATURES AND PRECIPITATION THROUGHOUT NEW YORK STATE FOR WEEK ENDING SUNDAY 8:00am, SEPTEMBER 8th, 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	66	2	115	2484	296	0.07	-0.67	17.18	-0.34
Glens Falls	83	37	63	0	90	2084	172	0.03	-0.74	16.32	-0.93
Poughkeepsie	82	47	63	-3	95	2345	50	0.12	-0.72	24.05	3.92
Mohawk Valley											
Utica	84	45	66	3	112	2228	238	0.24	-0.79	26.26	6.15
Champlain Valley											
Plattsburg	84	39	64	2	97	2025	87	0	-0.82	18.25	1.39
St. Lawrence Valley											
Canton	88	38	66	5	111	2026	285	0	-0.97	18.85	1.08
Massena	89	39	65	4	104	1957	129	0	-0.86	18.27	2.05
Great Lakes											
Buffalo	89	53	71	6	147	2413	313	0.02	-0.88	16.1	-1.74
Colden	87	49	67	6	122	1977	267	0.18	-0.94	14.86	-5.62
Niagara Falls	89	52	71	6	145	2374	268	0.01	-0.9	14.73	-2.54
Rochester	91	51	71	8	151	2548	518	0	-0.77	16.05	0.73
Watertown	89	40	67	5	119	2030	257	0.02	-0.81	14.99	0.93
Central Lakes											
Dansville	90	46	67	3	120	2281	237	0.58	-0.24	16.92	0.21
Geneva	91	48	69	5	134	2303	276	0	-0.77	15.73	-0.82
Honeoye	90	44	68	3	130	2182	64	0.29	-0.48	17.99	1.58
Ithaca	90	42	66	4	115	2154	318	0	-0.84	19.46	1.62
Penn Yan	92	49	70	6	143	2456	429	0.03	-0.74	13.15	-3.4
Syracuse	92	50	69	5	136	2555	497	0.4	-0.5	20.71	1.97
Warsaw	84	47	65	5	110	1933	352	0.24	-0.74	22.75	3.2
Western Plateau											
Alfred	88	40	65	4	104	2028	357	0	-0.81	19.48	-0.72
Elmira	92	41	66	3	115	2263	323	0	-0.71	17.88	1
Franklinville	86	44	64	5	101	1785	354	0.51	-0.47	22.27	2.51
Sinclairville	84	48	66	5	116	2005	395	0.08	-1.04	22.52	0.43
Eastern Plateau											
Binghamton	85	47	66	4	111	2176	294	0.17	-0.62	19.49	1.64
Cobleskille	84	43	64	2	96	2104	352	0.74	-0.15	19.37	0.22
Morrisville	86	44	64	4	101	1886	218	0.69	-0.22	22.21	3.16
Norwich	86	43	64	3	102	2062	308	0.44	-0.44	20.46	1.48
Oneonta	84	44	65	5	107	2229	614	0.37	-0.47	22.91	2.33
Coastal											
Bridgehampton	89	51	68	0	124	2451	304	2.68	1.84	19.54	0.75
New York	87	55	71	0	151	3296	436	3.13	2.29	20.99	1.03

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