



Berry Notes

Prepared by the University of Massachusetts Fruit Team

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Crop Conditions:

Strawberries: Disease pressure in strawberries remains high. Fruit is sizing up and may be ripening in some locations. Reports of two spotted spider mites are very low, due to the cool wet conditions. Slugs may be abundant this year during harvest especially in fields that are well mulched with straw. Weed management in newly planted fields is important now, especially after all this rain. **Blueberries:** Pollination weather was only fair this year during bloom and may have lead to low fruitset in some locations. Where populations of solitary bees and wild pollinators are high, pollination was probably adequate. See the article in this issue on assessing pollination in your field. Cranberry Fruitworm are beginning to be active in Massachusetts. Check traps weekly at a minimum. Control measure should be taken once trap captures have peaked, probably in another 10 days-or so. Symptoms of blueberry scorch virus will become apparent soon. Vigilance for detecting infestations of aphids is key to keeping the scorch virus out of your planting. Check out the New England Small Fruit Pest Management Guide at www.umass.edu/fruitadvisor for recommended materials and rates for controlling aphids. **Raspberries** are in pre-bloom to bloom. Botrytis fruit rot management will be key if wet weather continues during bloom. Fertilizer applications can be made to fall bearing raspberries now. Blackberry psyllid have been seen on Long Island. See article below on this insect and how to identify it. **Grapes** along the coastal areas are still growing very slowly showing up to 4" of shoot growth. Inland vineyards are farther along showing 10" – 12" of shoot growth. Poor shoot growth may be the result of winter damage to phloem tissue. See article below on this topic. Disease management is still a high priority. Also, prebloom foliar nutrient sprays can be made soon.

New England Small Fruit Pest Management Guide: The 2003 Small Fruit Pest Management Guide is available online at www.umass.edu/fruitadvisor. Print copies and CDs will be available soon. Ordering information will be forthcoming.

Twilight Meeting: A twilight meeting will be held on Tuesday June 24, 2003 at Nourse Farms (<http://www.noursefarms.com/>) in Whately, MA starting at 5:30 pm. This meeting will showcase varieties of strawberries, raspberries, gooseberries and currants. Please contact either Nourse Farms (413-665-2658) or me (413-545-4347) for more information and directions.

Canker Worm and Winter Moth in Eastern Blueberry Fields: Many blueberry growers in Eastern Massachusetts have reported for several years infestations of a green caterpillar in the spring that eats foliage and blossom tissue voraciously. This insect larvae has been identified as either Canker Worm or more recently as Winter Moth. For more information on this new pest, go to http://www.umassgreeninfo.org/news_events.html for two fact sheets on these insects.

Environmental Data:

STATE WEATHER SUMMARY For the Week Ending Sunday, June 1, 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	34	79	56	-1	0.00	1.86
NH	33	77	56	-3	0.90	4.11
VT	42	76	58	-1	0.13	2.29
MA	45	79	58	-3	0.64	3.55
RI	46	77	57	-4	1.71	3.28
CT	46	81	60	-3	3.19	4.91

(Source: New England Ag. Statistics Service, Weekly Crop Weather Report, Volume 23, Number 6, June 2, 2003)

Strawberries

Weed Management in Matted Row Strawberries

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

Weed control is probably the single most important factor determining longevity of matted row strawberry plantings in the northeast. It is critical for growers to successfully manage weeds in spite of limited herbicide availability and the high cost for hand weeding. A truly integrated approach to weed control is needed including chemical control, hand weeding, and cultural practices to successfully control weeds.

Chemical control is most appropriate at renovation and during strawberry dormancy in the fall or early spring. By late spring chemical control in strawberries is limited to grass control and to new, non-bearing plantings due to days-to-harvest restrictions and phytotoxicity to actively growing strawberry plants. Sethoxydim (Poast) can be applied for control of grasses less than 6 inches tall and actively growing up until the 7 days to harvest.

For new fields, the elimination of perennial weeds before planting with cultivation and a broad-spectrum herbicide such as glyphosate (RoundUp) is important for good stand establishment. Also an application of a preemergent herbicide such as napropamide (Devrinol) should give good control of germinating seeds for the first 4-8 weeks. As the residual activity of this herbicide disappears, cultivation becomes the main option until dormancy in late fall. Sinbar was recently granted a supplemental label on first year strawberries for control of annual grasses and broadleaf weeds. Sinbar should be applied at 2-3 oz per acre after transplanting but before new runner plants start to root. If strawberry plants are allowed to develop new foliage prior to Sinbar application, the application *must* be followed

immediately by 0.5 to 1 inch of irrigation or rainfall to wash the Sinbar off the strawberry foliage. Finger weeders, flex tine cultivators, and rolling cultivators can provide good weed control in new plantings and also help set runners into the row. A grass herbicide such as sethoxydim (Poast) can provide control of actively growing grasses only and may be appropriate for specific weed problems. Hand weeding is important in late spring to clean up any weeds missed by fall and early spring herbicide treatments.

Several weeds can be established and flowering by late spring leading to summer weed problems. Dandelions, field pansy (Johnny-jump-ups), and groundsel can all be flowering and distributing seeds widely at this time. These weeds can develop seeds from open flowers even after pulling or cultivation so the plants need to be removed from the field to eliminate the seeds. Field bindweed is also emerging at this time and needs to be nipped in the bud before it gets out of hand.

Cultural practices such as mowing border areas and clearing fence rows is important to avoid new weed seeds blowing into fields. Additional straw mulch can also be added to thin areas in fields to keep weed seeds from germinating while also maintaining soil moisture and keeping soil away from developing berries. Managing weed pests through an integrated program of chemical control, good cultural practices, and vigilant hand weeding can help ensure the vigorous establishment of new plantings and a long life for matted row strawberry fields in the northeast. (Source: New York Berry News, Vol 2., No. 5, May 16, 2003)

Angular Leaf Spot Showing up in Strawberries

Annemiek Schilder, Michigan State University

Angular leaf spot, caused by the bacterial pathogen *Xanthomonas fragariae*, is showing up on strawberry leaves. Typical symptoms are small angular, watersoaked spots on the undersides of leaves. The spots may appear shiny or wet

due to bacterial ooze. On the upper leaf surface, the spots are less distinct and may appear reddish brown. If you are not sure whether the spots you see are bacterial or fungal in origin, hold the leaf up to the light: angular leaf spot is

translucent, whereas fungal leaf spots are opaque. While the foliar phase of angular leaf spot may cause leaves to senesce prematurely, it is not of much economic concern. Of more concern are calyx (fruit cap) infections, which are caused by bacteria originating from leaf lesions. Infected calyces become black and shrivel up, make the berries look less desirable, thereby reducing their marketability. If angular leaf spot on the foliage is severe, the likelihood of calyx infections is greater.

Development of the disease is favored by mild, humid days (65-70C) and cold nights with near-freezing temperatures. Spread is facilitated by rainfall, overhead irrigation, and harvest operations. Irrigation for frost protection can inadvertently increase angular leaf spot severity. Control of angular leaf spot takes an integrated approach, including the use of healthy transplants to exclude the bacterium from newly planted fields. Most epidemics are thought to originate

from infected plant material because *X. fragariae* is restricted to strawberry and does not persist well in fields after the crop has been removed. Other control methods could be the use of resistant or less susceptible cultivars (e.g., Delmarvel); avoiding harvesting or moving equipment through fields when the plants are wet; working in highly infected fields last to avoid spreading the disease to less affected fields; and overhead-irrigating only when absolutely necessary. The only chemical currently available for control of this disease is copper (e.g., Kocide, Cuprofix). Thorough coverage is important as copper is strictly a protectant. Be careful when using copper compounds under cool, slow-drying conditions, as phytotoxicity may result. Copper injury will be visible as a purple discoloration of the foliage. (Source: Michigan Fruit Crop Advisory Team Alert, , *Vol. 18, No. 7, May 27, 2003*)

Brambles

Blackberry Psyllids

Daniel Gilrein, Cornell University

Blackberry Psyllids were observed in thornless and thorny blackberries this week. These tiny insects resemble brownish leafhoppers and cause the terminal stems and foliage to twist and stunt dramatically. Only the slightest distortion was observed so far. Adults overwinter in conifers or possibly other protected sites, migrating to blackberries in spring. Affected terminals with psyllids can be pruned off and destroyed as soon as

observed. There are no specific labeled insecticides for this pest, although other insecticides labeled for blackberries used for other pests should provide incidental control. Orange rust was also observed in one planting. Plants should be immediately removed (including all roots); Nova can be applied from budbreak up to harvest (see label for restrictions). (Source: *Long Island Fruit & Vegetable Update, No. 12 May 30, 2003*)

Winter Injury in Raspberry

Bob Tritten, Eric Hanson, Annemiek Schilder, Gary Thornton, Michigan State University

Over the last three to four weeks, we have noted a collapse of summer raspberry canes at many farms across the state. These canes appeared to be healthy earlier this spring, and in most cases began to develop normal bud swell and leaf development. Later it became more apparent that these canes were injured by some cold weather events that occurred this past winter.

Our best guess is that most of the injury to raspberries in the southern part of the state occurred during a cold event last December 3 and 4, 2002. For southern Michigan, recall back to last fall when we had an untypical mild season. According to weather records at several reporting stations around the region we did not experience the typical gradual cooling of temperatures in October and November. Many stations reported temperatures of in the range of -12 to -15°F on the nights of December 3 and 4, 2002. Up until that time we only hit 15°F once, and only saw temperatures in the low 20's a couple times. Many raspberry plants still retained leaves in early December, additional evidence that they had not harden off as they typically do in the fall. In

northern parts of the state, injury appears to have resulted from a cold event in early March. On March 1, temperatures approached 40°F, and by 5:00 AM on March 3, it was -12°F. In some fields, this abrupt change killed the canes back to the snow line. In other plantings only the tops of the canes were killed back.

Not all fields were heavily damaged. One variable that affects the hardiness of canes appears to be disease control. For the past few years we've also noticed in fungicide trials in southeast Michigan that winter injury is much less where disease control programs have been implemented the previous season (see Table 1). This is most likely due to the reduction in foliar and cane diseases, such as leaf spot, anthracnose, spur blight and cane blight. Anthracnose and cane blight in particular can weaken canes and predispose them to winter injury. Spur blight may kill buds at lesion sites and leaf spot may result in premature leaf senescence, which may also reduce winter-hardiness in severe cases. These diseases may not be apparent until later in the season (e.g. after harvest). We believe cane diseases play a bigger role in winter injury than previously assumed. Some varieties

are particularly prone to cane diseases and may experience repeated problems when disease control is poor. Fungicides that are effective against foliar and cane diseases are Captan+Benlate, Cabrio, Abound and Nova. Ideally, these materials should be alternated to **Table 1.** Effect of fungicide programs in 2002 on disease incidence in 2002 and number of live canes in 2003.

prevent development of fungicide resistance in target fungi. Remember that Cabrio and Abound belong to the same chemical class and therefore have the same mode of action. Lime sulfur will reduce overwintering inoculum when applied as a delayed dormant spray.

Treatment, rate/A	Application timing ^z	Leaf spot severity (%) ^y	Anthracnose incidence (%)	Spurblight/Cane blight incidence (%)	Live floricanes per 3 ft in 2003
Untreated		4.50 a ^x	77.5 a	32.5 ns	2.8 a
Captan 50WP 4 lb Abound 2.08F 10 fl oz	1, 3, 5 2, 4	0.28 c	10.0 b	22.5	17.8 c
Captan 50WP 4 lb Nova 40WP 2 lb	1, 3, 5 2, 4	0.15 c	10.0 b	15.0	15.3 bc
Compost tea	1, 2, 3, 5	0.13 c	10.0 b	12.5	9.3 ab

^zSpray dates in 2002: 17 May (leaf expansion), 29 May (prebloom), 10 Jun (green fruit), 19 Jun (green fruit), 9 Jul (ripe fruit).

^xColumn means followed by the same letter are not significantly different according to Fischer's Protected LSD test (P#0.05); ns = not significant.

Of course varieties differ in winter hardiness. The 2002-03 winters were a good test of hardiness for 15 varieties in a trial at the Southwest Michigan Research and Extension Center in Benton Harbor. The previous two winters were relatively mild and only injured the tenderest varieties. The varietal differences have held across years (Table 2). The hardiest types in this trial are Boyne, Killarney, Lathan, Nova and Prelude. Those that appear hardy enough for southern Michigan but may suffer injury in northern parts of the state include Canby, Encore, Reveille, Titan and K81-6. Those that do not appear adequately hardy, even for southern Michigan, are Lauren, Malahat, Qualicum, and Tulameen.

Winter-injured canes should be removed from fields as soon as possible. In severely affected fields where there are few healthy canes, it may be best to mow entire rows or sections off and simply start over for next year. While this is a severe treatment, it will reduce pruning and spray costs and may reduce disease by eliminating injured wood. (Source: Michigan Fruit Crop Advisory Team Alert, Vol. 18, No. 7, May 27, 2003)

Table 2. Winter injury to red raspberry canes at SWMREC, Benton Harbor, MI.

Variety	Winter kill (inches/cane)		
	2001	2002	2003
Boyne	2	1	1
Canby	4	1	25
Encore	1	0	10
Glen Ample	2	0	22
Killarney	1	0	3
Latham	3	0	2
Lauren	8	3	28
Malahat	12	8	31
Nova	1	1	1
Prelude	0	0	1
Qualicum	6	1	37
Reveille	1	0	4
Titan	6	0	12
Tulameen	23	7	35
K81-6	2	1	17

Summer Red Raspberry Spring 2003 Evaluation

Dr. Richard Funt, Ohio State University

Eight varieties of thornless summer-bearing red raspberries [Lauren, Emily (formerly JAM-2), PCA-B4, PCS-1, PCS-2, MDJ-W4, NAN-5, and OAM-W2] were planted on 2 foot spacing in May 2000 at the VanMeter farm in the Scioto River Valley of Ohio. Plots were replicated four times, except Lauren.

Soils at the site are predominantly Huntington silt loam. Average temperatures range between 32 to 75 degrees F and relative humidity ranges between 79 to 93%.

The mean annual rainfall is approximately 36 inches +8 inches, with about 40% of the precipitation falling between May and September. Drip irrigation was installed and is used to maintain adequate soil moisture. Recommended pest control measures were followed to control weeds, insects, and disease.

Varietal descriptions are based upon the breeders' comments and are not necessarily indicative of what we observe at this site:

- ⇒ **Lauren** (USPP#10610) [USDA, Maryland, 1997 (Reveille x Titan)] was selected at the Wye Institute as a very large, very early, vigorous and productive spring-bearing red raspberry. It is short chilling and performs well in -20EF weather in Minnesota, producing fruit the size of ‘Titan’, but with more uniform stands in wetter soils. Its flavor was much superior to ‘Titan’, but like ‘Titan’, it suffered when experiencing warm spells followed by cold in March or April. Typically, Lauren survives January and February cold very well and can produce if kept cool.
- ⇒ **Emily** (USPP#12173) was selected at the Wye Institute as having the firmest, most conic fruit. It is only mildly flavored. It has a longer chilling requirement than ‘Lauren’, it readily winterkills, and is susceptible to Phytophthora and overuse of typical residual herbicides.
- ⇒ **PCA-B4** is a species hybrid (*R.stellarcriscus*, *R. corchorifolius*, *R. pileatus*, *R.occidentalis*, and *R. strigosis* = *R. x prittsii*) selected for clean foliage, resistance to root rot, and large size. Fruit is flavorful and acceptably firm (arising from soft parents).
- ⇒ **PCS-1** is a very vigorous and productive early fruiter. It has good flavored, moderate-sized fruit.
- ⇒ **PCS-2** is a very vigorous and very productive late fruiter. It has large and flavorful fruit. PCS-2 canes are clean of fungi, especially in their protracted ripening period.
- ⇒ **MDJ-W4** is a cold hardy, red raspberry selection that has AmosH, NY 817, Skeena, and Titan in its background. It is productive with medium-sized round fruit that is somewhat soft.

⇒ **NAN-5** is a small-fruited hybrid with high sugar and high acid. It is productive, purple, cold hardy, and has good flavor.

⇒ **OAM-W2** has conic, large, flavorful species hybrid fruit. OAM-W2 fruit may be somewhat soft, but the plant has survived -20EF and lower temperatures.

This year plants were pruned the week of April 14, 2003. Rows were narrowed to approximately 22 inches (slightly wider than the recommended width of 18 inches), spent floricanes were removed, dead tips on the current year floricanes were removed, and weak canes were also removed. Nine feet of row in each plot were randomly selected and the number of canes was counted and average height determined. Based upon cane counts, we can say:

- ⇒ **PCS-1** has at least an acceptable average cane count in three of the four plots, and one of those is slightly high.
- ⇒ **NAN-5** has the highest stand count in one plot and acceptable levels in a second plot.
- ⇒ **OAM-W2** has acceptable cane survival in one of the four plots.

The average height of canes is somewhat dependent on location in the field, but when averaged across the field they are ranked from tallest (=1) to shortest (=8).

1. PCS-1
2. (tie) OAM-W2, PCA-B4
3. NAN-5
4. PCS-2
5. Lauren
6. MDJ-W4
7. Emily - floricanes did not survive the winter, although there are new primocanes developing.

Our winter low temperature was measured on January 27 and was approximately -4 degrees F. (*Source: Ohio Fruit ICM News, Volume 7, Issue 19, May 22, 2003*)

Blueberries

Blueberry Scorch (AKA Sheep Pen Hill Disease AKA BBScV)

Peter Oudemans, Rutgers University

This year BBScV is expressing itself in a very severe form. Symptoms of this virus disease is now very apparent in both Atlantic and Burlington Counties. Diseased plants are easily recognized and scouting for them should be in full

operation. In the table below I have given an outline of cultivars and symptom severity. Infected plants should be removed now or flagged for removal later.

Cultivar	Symptoms
Chanticleer, Duke, Elliott, Berkeley, Weymouth	Blossoms blighted, tip dieback evident, leaves stunted and chlorotic. This is considered the most severe expression of the disease
Coville, Sierra	Tip dieback evident with some blossom blighting. The bushes will set a crop although yields are reduced.
Bluecrop	Some blossom blighting and reduced fruit set, leaves chlorotic. Tip dieback is infrequent. Typically bushes show increasing symptom development over a period of years.
Bluetta, Early Blue, Blueray	No symptoms observed. Infections may be masked by other virus diseases such as red ring spot.

Jersey	Plants slightly chlorotic and berry load may be slightly reduced, no flower blighting or tip dieback
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Key points for a Virus Disease Management Program

- ⇒ **Identification, diagnosis.** Developing the ability to recognize symptoms and knowing the virus type is key to developing a management program. Identification of a virus is often difficult unless it has been previously described. In the case of scorch there are several approaches to identification. If you are unsure of the symptoms an antibody based method should be used. Several options exist. We have had success with the BBScV AgriCheck detection kits supplied by Hydros, Inc. of Fallmouth MA (tel. # (508) 540-2229). Alternatively diagnosis can be made by your local extension agent/specialist.
- ⇒ **Vector management.** Viruses must be transmitted by a vector such as an insect (aphids, leaf hoppers, beetles, white flies etc.), a nematode (such as the sting or dagger nematodes), pollen or mechanically by

grafting, abrasion and pruning. For the scorch virus aphids are considered the primary insect vector and growers should follow current recommendations for aphid management.

- ⇒ **Sanitation.** This refers to developing or maintaining a virus free farm. Although proven successful sanitation practices represent a serious time commitment and require significant effort. Removal of infected plants should be conducted yearly. Symptom expression is greatest at this time of the season therefore scouting for diseased plants should be underway. If plants cannot be removed now they should be flagged for removal later because symptoms will decrease. For planting or propagating the grower should be certain that only healthy mother plants and certified planting material be used. (*Source: Blueberry Bulletin Vol. 19, No. 7, May 30, 2003*)

Blueberry Pollination

Gary C. Pavlis, Rutgers University

In fields where poor pollination is feared, because of poor bee activity, visual symptoms should be checked before investing in gibberellin sprays to promote set of berries. If a large percentage of flowers are turning purple instead of dropping, while still white, this is a sign of poor pollination. Lack of rapid growth of the ovaries and their discoloration also are indicative of pollination failure. Already, "red caps" are beginning to fall from Weymouth and Earliblue bushes. This is a designation given to unpollinated berries which turn reddish and/or yellowish and then drop. A small amount of drop is expected and occurs even with good crops. If your estimate of the number unpollinated flowers (purple flowers plus red cap) is less than 20 percent it may not be profitable to spray with gibberellin. It is almost always profitable to use this spray on varieties which are not attractive to honey bees: Earliblue, Coville, Berkeley, Stanley, 1316-A and Concords. The best timing is when two thirds of the blossoms have dropped. This spray (Pro Gibb-80 oz. per acre with sticker, or Gibrel) is absorbed through the skin of

the ovary making it unnecessary for the flower and pistil to be attached.

The following guidelines may be helpful in determining whether Gibberellin is needed:

1. Bee activity has been consistently poor. Unless at least an average of 20 bees can be seen actually entering flowers in a 10 minute period, pollination will be below normal.
2. Flowers are hanging for long periods and turning purplish (wine color) before dropping. When pollination is progressing well blossoms drop while still bright white in color. A vigorous shaking of canes should cause a shower of white corollas dropping to the ground.
3. Ovaries are rapidly swelling soon after flowers drop and are staying green ? not turning yellowish or reddish in color. (*Source: Blueberry Bulletin, Vol. 19, No. 7, May 30, 2003*)

Grapes

Intrepid, A New Pesticide for Grape Berry Moth

Roger Williams and Kevin McClure, Department of Entomology, OARDC, Wooster, Ohio.

2002 was the worst year on record for the damage caused by the Grape Berry Moth. Thus, it is with great interest that a new compound has just been released for

this pest. The EPA has recently approved the use of Intrepid for the control of Grape Berry Moth and several other related insects that attack the vine. However, there is great concern

among researchers that Sevin is losing its effectiveness against GBM.

New York entomologists have determined that indeed the Grape Berry Moth is becoming resistant to Sevin, and we all fear that resistance may be developing to Danitol. So a warning: before you use Intrepid you need to plan to alternate spray materials or we will shortly lose all our weapons against Grape Berry Moth and other grape insects. Researchers in Ohio and neighboring states have evaluated and confirmed that the efficacy of Intrepid against Grape Berry Moth is superior. It also exhibits a long residual on the grapevine.

Intrepid 2F (methoxyfenozide) insecticide is a product of Dow AgroSciences of Indianapolis. This product should provide a needed alternative to other products labeled for the Grape Berry Moth and help to limit pest resistance

when alternated with other compounds. It is to be applied at initiation of egg hatch.

At the recent Grape Berry Moth Summit the researchers from all the states surrounding Lake Erie agreed that it was most effective when used at the beginning of the 2nd generation and reapplied within 10-18 days to ensure complete coverage of fruits or foliage. There is a pre-harvest interval of 30 days. In other words, grapes are not to be harvested within 30 days of the last application. We are restricted to no more than 16 fl oz/acre/application or 48 fl oz/acre/season of Intrepid 2F.

Toxicity is as follows: Oral LD50 - mouse: >5000 mg/kg; Dermal LD50 - rat: >2000mg/kg; Inhalation LC50 - rat: 0.9 mg/ l for 4 hr. The oral toxicity and the dermal toxicity are very favorable for mammals. However, the inhalation toxicity is a little high. Always use proper protection when handling and spraying all pesticides. (**Source:** Facts for Fancy Fruit, Vol. 03, No. 05, May 30, 2003)

Dead Phloem

Hans Walter-Peterson, Cornell University

Several growers have recently asked us about Niagara vines that have stunted shoots that are growing very slowly, if at all. Figure 1 is a picture of a Niagara vine here at the lab at about 8-10" inches of growth as of this morning. Our Niagara vines here are all at about this growth stage. Figure 2 is a picture of a Niagara vine in one of our rootstock experiment blocks on Christy Road, where if there are shoots that pushed out, have just about stopped growing at about 1-2" of growth. What's going on here? (click here <http://lenewa.netsync.net/public/Update.htm> to see the pictures with the article)

Terry Bates, Rick Dunst and Martin Goffinet have looked at these vines, and have found that in many of these cases, much of the phloem of the plant has died, most likely due to the very cold weather we had this winter. Phloem is one of the two major types of vascular tissues in the vine, mainly responsible for transporting sugars throughout the vine. If these cells are dead, growth can't continue because the vine's reserves that are being mobilized to power the initial growth of the vine can't make it to the growing shoot. And if the vine can't get sugars and other materials to the shoots and clusters, it will eventually peter out (as more growers are starting to see). This is also not happening just on young Niagaras,

either. We've seen and heard of older Niagara vines having the same problem.

The phloem forms along the outer edge of the shoot. When you cut a one-year old cane with dead phloem you see a brown circle just inside of the bark layer (Figure 3). In a healthy cane, the phloem would appear green (Figure 4).

So where does this leave us? If you have vines that seem to be suffering from a lack of growth, but are pushing out strong suckers, cut a few canes and see if the phloem layer in the canes is dead. If so, you may need to think about retraining suckers to replace those vines. So the answer right now is to **KEEP YOUR SUCKERS** this year, in order to train up new vines to replace those that are badly injured. This may make managing the vineyard under the trellis a bit more of a challenge as you try to manage the weeds under the trellis, but keep the suckers pushing out. If you find yourself in this situation, don't apply Gramoxone under your vines this year. Take the time to look through your vineyard to see where you might need to keep suckers in order to retrain new vines, before going through to apply Gramoxone which will eliminate your chance to begin the retraining process later this year. (**Source:** *Lake Erie Regional Grape Program Crop Update, May 29, 2003*)

Cluster And Shoot Blight

Alice Wise, Cornell University

Most vineyards are showing symptoms of a blight of shoots and clusters. While this is rare, it is not surprising given the extreme weather than we've been having. Chances are we are looking at an early season Botrytis blight.

On shoots, a sunken brown area develops, starting either at the base of the shoot or around a node. In some cases, the shoot tip has browned and has wilted. The stem of the cluster (the part

between the cluster and the shoot) and/or the rachis (the actual stem of the cluster) may be desiccated as well.

A number of varieties appear to be affected. On several farms, Cabernet Franc is faring the worst followed by Chardonnay. Merlot seems less susceptible but symptoms can be found. Incidence and severity varies from farm to farm. Reasons for this are still being pondered.

One astute vineyard manager wondered if the incidence of blight in Cab Franc was related to its earliness and to the fact that we had a light frost maybe the second weekend in May. There are a number of vineyards seeing frost injury in low spots. It is conceivable that the frost killed a few cells here and there but did not kill tissue outright. Under this scenario, Botrytis, being an opportunistic fungus that attacks senescing tissue, had both a highly susceptible target and the right weather conditions.

After examining several vineyards, tan/gray fuzzy sporulation was finally seen in several locations, confirming

the presence of Botrytis cinerea. There is a slight possibility that another fungus called Sclerotinia is involved. Sclerotinia is often accompanied by a white mycelium or strands of white fungus, evident if viewed up close. We did not see any mycelium but perhaps a trained eye is required. Samples have been overnighted to Wayne Wilcox for positive ID. Further comments will be posted on the vineyard manager list serve.

What to do especially given the potentially wet forecast for the next week? The hands down best control for either Botrytis or Sclerotinia is sunny dry weather. In lieu of that, the strobilurins have some activity against Botrytis. Sovran and Flint are rated with two pluses, Abound has one plus. If we are dealing with Sclerotinia, any materials with action against Botrytis may also help with that as the two fungi are related. Captan may help slightly (rated as one plus), mancozeb perhaps. Vineyards with infections should probably plan on a bloom Botrytis spray. Also, canopy management to eliminate areas of shoot crowding (and hence slower drying after a rain) will also help. (*Source: Long Island Fruit & Vegetable Update, No. 12 May 30, 2003*)

Prebloom Foliar Nutrient Sprays

Alice Wise, Cornell University

There are some prebloom sprays useful in certain situations. Visual verification as well as petiole analysis can be helpful in diagnosis of deficiencies. It is a very good idea when applying foliar nutrients to leave an untreated section of vineyard if possible. This allows comparison of treated and untreated vines. The most common sprays are discussed below. Due to a lack of solid data, organic options are not discussed however there are a number of organic products containing micronutrients.

⇒ **Nitrogen** - First and foremost, N fertilization should be addressed via ground application whether using a dry product or dripping in liquid N. Dr. Pete Christensen, emeritus professor at UC Kearney Ag Center, related at the '99 Ag Forum that grapes are relatively inefficient leaf feeders (vs. apples for example). It is not surprising therefore that the vast majority of research trials have found little or no benefit to foliar-applied N. If vines are N-deficient, however, there might be a response. Some growers feel foliar N at this time of year helps sluggish growth. There are many different products from which to choose including organic options.

⇒ **Zinc** - Considered essential for proper cluster development, berry set and normal shoot growth. Deficiency is seen early summer. New leaves are smaller, distorted and may be chlorotic with darker green veins. Straggly clusters and shot berries may also occur. Soil application of Zn is less effective because Zn is tightly bound in soil. Zinc sulfate, zinc oxide and chelated Zn are used as foliar sprays; follow label for rates. Apply one time 2 weeks prior to bloom. Some

western grape growers consider zinc an essential springtime spray.

⇒ **Boron** - Deficiency is seen as stunted zigzag growth and death of shoot tips, poor set with shot berries, often flattened or oblong. Soil treatment is effective since boron (B) moves with the soil water, however this is best applied in the fall or with the spring herbicide. For foliar sprays, use 0.2 lb./a actual B (Solubor is 20% B, so 1 lb. Solubor = 0.2 lbs. actual B) in 1 or 2 prebloom sprays, 8/12" and/or early bloom. There should be a minimum of 2 weeks between sprays to minimize the chance for phytotoxicity. Boron toxicity can easily cause leaf scorching/distortion and shoot stunting. This has been seen locally on a number of occasions though the culprit has more often been ground applied boron. Boron interferes with the dissolving of water-soluble packets used for certain pesticides. When tank mixing, dissolve the packet thoroughly in the spray tank and then add B to the spray mix.

⇒ **Manganese** - Deficiency is seen mid-late summer starting as interveinal chlorosis on basal leaves. A herringbone pattern is characteristic. At soil pH's >6.0, e.g. properly limed soils, Mn availability in the soil is relatively low. Where a deficiency is confirmed by petiole analysis, foliar applications of manganese sulfate (2-3 lbs./100 gal.) are recommended as a corrective measure. Other manganese products used at label rates may also be effective. Foliar manganese oxide materials are considered to be less effective. (*Source: Long Island Fruit & Vegetable Update, No. 12 May 30, 2003*)

General Information

2003 Agricultural Fairs Directory Published

Diane Baedeker Petit, Massachusetts Dept. of Food and Agriculture

"Massachusetts Agricultural Fairs 2003," an annual guide to a perennial favorite family pastime, has been published by the Massachusetts Department of Food and Agriculture. The directory includes nearly 60 major, community, youth, livestock and Grange fairs held across the Bay State every summer and fall.

Fair dates, location, and admission charge are provided for each fair as well as attractions and entertainment. The directory also features a list of fairs by date. The guide is on-line at www.mass.gov/dfa/fairs/fair_list.htm. For a paper copy, call 1-877-627-7476.

"Fairs are a celebration of the great diversity, innovation and tradition that characterizes Massachusetts agriculture," says Massachusetts Commissioner of Food and Agriculture Doug Gillespie. "Country fairs provide something for everyone in the family and offer a chance to see agriculture in action."

American agricultural fairs have their roots in the Bay State. Elkanah Watson exhibited his two Merino sheep on the public square in Pittsfield, Mass. in 1807 and is considered "the father of American Fairs." The first fair in this country - as we know them today - was held in Pittsfield in 1814 by the Berkshire Agricultural Society. Two of three agricultural societies incorporated in Massachusetts in 1818 are still operating fairs today: Essex Agricultural Society at Topsfield and the Hampshire, Franklin and Hampden Agricultural Society at Northampton.

For more information, visit www.mass.gov/massgrown, a service of the Massachusetts Department of Food and Agriculture.

Critical Frost Temperatures

Ms. Dale Riggs, The Berry Patch and D. Riggs Consulting, Stephentown NY, www.theberrypatch.net

I find that using a digital thermometer inserted right into the flower receptacle is the best way to monitor for turn on for irrigation purposes. I live in a very cold part of upstate NY (same temps as the Adirondacks) and using the digital thermometer has greatly reduced the number of hours I've had to irrigate. We irrigated twice two weeks ago (its been clouds since then) and I turned on the irrigation when the blossom temperature was 31 F (dew point temp was 27 F). The 3 min-max thermometers I had in the field all registered 27 F when I turned on the water. I've been using the flower temperatures for two or three years now, have greatly reduced the number of hours I irrigate and haven't lost a flower. We had 5 straight nights of hard freezes in 2002 (lows were 16, 18, 20, 20, and 24 F at blossom level) and

I never lost a blossom even though most people around us were wiped out. They followed air temperature, and did not consider dew point. They waited too long to turn on the water with the very low dew points and froze the flowers when they turned on the water because of evaporative cooling. I used blossom temp, dew point, and turned on the water at 8 PM a couple of nights.

Barclay Poling at NC State has a great berry web site and in the archives, there is some excellent info about using digital thermometers and frost protection. Katie Perry at NC State also has some great fact sheets about frost protection. I bought my digital thermometer for less than a hundred bucks, added two probes, and have a dew point monitor. All told I spent less than \$300 on all the equipment. Hope this helps