Volume 14, 2002

Berry Notes

Prepared by the University of Massachusetts Fruit Team

July 18, 2002, Vol. 14, No. 13
Summer Issue #9
http://www.umass.edu/fruitadvisor/berrynotes/index.html

Berry Notes is edited by Sonia Schloemann with articles reprinted from other sources. Authors and sources are always cited. Publication is funded in part by the UMass Extension Agroecology Program and grower subscriptions. A text version can be e-mailed to you if you contact Sonia Schloemann at 413-545-4347, sgs@umext.umass.edu. Please cite this source if reprinting information.

Crop Conditions and Pest Summary

Strawberry renovation continues. Check new fields for evidence of potato leafhopper burn. Keep renovated fields as well as new plantings regularly irrigated. See last weeks Berry Notes for details on the renovation steps. This weeks issue contains information on leaf tissue testing which is an important activity after renovation. **Highbush Blueberry** harvest is underway. Send in leaf tissue samples for nutrient testing. This is especially important for blueberries since soil tests are not a reliable check on adequate nutrition. **Summer raspberry** harvest is also underway. Be on the look-out for Orange Rust on black raspberries and blackberries. Also keep an eye out for symptoms of fire-blight in raspberries. More on both below. **Grape** clusters are forming. Crop estimates are made at this time of year. See more on this below. Leaf pulling and cluster thinning will soon follow. Mite infestations can build up quickly at this time of year. Be sure to check the underside of your leaves.

ENVIRONMENTAL DATA

This information is intended to be used as a guide for monitoring the developmental stages and planning management strategies of pests in your location. Growing degree day (GDD) and precipitation data was collected for the one-week period, June 27 through July 10, 2002. Soil temperature and phenological indicators were observed on July 10, 2002.

Region/Location	Growing Degree Days		Soil Temp (4" depth)	Accum. Precip
	1 Week Gain	Total		
Cape Cod: Barnstable	358	1018	80° F	0.00"
Eastern: Hanson	370	1101	68° F	0.80"
Waltham	424	1320	65° F	1.66"
Central: Boylston	332	969	65° F	2.15"
Western: Amherst	358	1130	61° F	0.81"
Great Barrington	258	978	67° F	0.28"

*(**Source**: UMass Extension Landscape Message #18, July 12, 2002)*

Strawberries

Strawberry Update

Sonia Schloemann, UMass Extension

Fertilization: You will be fertilizing your bearing fields with 25-60 lbs. N/acre as part of the renovation process, but new plantings will benefit from a fertilizer application now, too. 30 lbs of actual N per acre is the amount to apply. Use whatever form is cheapest. 200 lbs of 15-15-15 is one possibility, but 90 lbs of ammonium nitrate is fine if you applied P and K at planting. Keep applying N at monthly intervals until you've put on a total of about 100 lbs of actual N.

Leaf Tissue Sampling: Leaf tissue analysis is a way of determining the actual nutritional status of plants. It is an excellent and inexpensive way of finding out if your fertilization program is working or if changes need to be made. The analysis provides information on foliar N, P, K, Ca, Mg, Mn, Fe, Cu, B and Zn levels for the leaves sampled and recommendations for corrective measures if needed. Combined with soil testing, leaf

tissue analysis can help pinpoint the source of problems and determine what measures may be needed to ensure proper nutrition of the crop. For strawberries sample from the first fully expanded new leaves after renovation.

Collect 30 - 50 leaves per sample. Sample different varieties separately, if possible. Collect leaves from as many plants as possible in the sample area. Remove the petioles (leaf stems) from the leaves. Gently wash the leaves in tap water to rinse off soil or spray residue. Allow the leaves to air dry until they are brittle before placing into a paper bag. The cost per sample is $18. A check made out to *the University of Massachusetts* must be sent in with the sample. Send sample(s) to the Soil and Plant Tissue Testing Lab, West Experiment Station, Box 38020 UMass, Amherst, MA 01003 or call (413) 545-4768. Test results will be accompanied with recommendations.

Potato leafhopper: Check new plantings now for potato leafhopper (*Empoasca fabae*) damage. Leafhoppers feed primarily on the underside of strawberry leaves, causing them to yellow between the veins and become curled and distorted. Feeding activity is most serious during the late spring and early summer. Leafhoppers are 1/8 inch long, green, bullet-shaped insects that take flight quickly if disturbed.

The nymphs are light green and do not fly. Nymphs are easily identified by their habit of moving sideways when disturbed. Insecticides should be applied only when large populations of nymphs are noted on the leaves or symptoms become apparent.

Black Vine Weevil Management in Strawberry

(Vern Grubinger, Univ. of Vermont

from info supplied by Richard Cowles, CT Ag. Exp. St., Peter Shearer, Rutgers Coop. Ext., and others)

The larvae of several kinds of root weevils can cause serious damage to strawberry roots, leading to reduced yield and in at least one case this year in southern Vermont the complete demise of a previously healthy field. Black vine weevil (BVW) is probably more common than strawberry root weevil or rough strawberry root weevil in New England. The life cycle and management of these weevils are the same. Their larvae are whitish, crescent-shaped larvae and 1/4 to 1/2 inch long with no legs. Adults emerge and feed from May through August, laying eggs as late as October that hatch and overwinter as larvae. Adult feeding causes characteristic scalloping or notching of the leaf edges, but rarely does this cause economic damage. (Feeding on the interior of the leaf, causing holes, is caused by Asiatic garden beetles or Japanese beetles.)

Adults weevils hide in the crowns during the day and feed at night. They are not easy to kill with insecticides so a better strategy is to kill the larvae with applications of beneficial nematodes. If adults are numerous (i.e. more than 50 out of 100 leaves sampled across the field have notching) then a spray may be warranted. The pyrethroid bifenthrin (Brigade) provides some control if used at the highest labeled rates. The best timing for this spray is at night during the peak feeding activity of adults, before they start laying eggs, or about 1 week before harvest ends. Neem-based products containing azadiractin (such as Aza-Direct) may be acceptable for organic production, and while neem will not kill the adults it can disrupt egg-laying if applied at high rates at least twice. While Admire is very good for controlling some white grubs it is mediocre against Asiatic garden beetle and very poor against BVW.

Although bifenthrin claims to kill spider mites, many twospotted spider mite populations are resistant to pyrethroids. Spraying this product or other pyrethroids usually exacerbates spider mite problems by selectively killing off predatory mites. Growers challenged with black vine weevil problems should plan well ahead, and use horticultural oil (SunSpray UltraFine Oil) early in the growing season. If applied with an airblast mist blower, oil can be inexpensive, effective, and non-toxic to predatory mites. This strategy can then reduce the risk of spider mite problems later. Be sure to use oil ~2 weeks before any Captan sprays, because the two products are extremely phytotoxic. Alternatively, Brigade may be applied with oil 2 - 3 days after mowing the foliage during renovation. This approach should jointly control spider mites and root weevil adults.

The key to successful use of beneficial nematodes is sufficient time for multiplication of the nematodes in hosts (weevil larvae) and dispersal of nematodes throughout the soil. Early- to mid-May application has given excellent results, especially when the numbers of larvae of the next weevil generation are evaluated in the autumn. Research in CT, NJ and elsewhere has shown that the appropriate nematode species properly applied can effectively infect and suppress weevil populations. Heterorhabditis bacteriophora (Hb) appears to be the best candidate for control of root weevils when the soil temperature is above 60 degrees ('J-3 Max Hb' from The Green Spot; 'GrubStake HB' from Integrated Biocontrol Systems; 'Larvanem' from Koppert Biologicals). Beneficial nematodes can also be applied in late summer (August 15 - September 1), and in that case, Steinernema feltiae ('Nemasys' from Griffin Greenhouse Supply, 'Gnat Not' from Integrated Biological Control Systems, 'Entonem' from Koppert Biological) should be considered in northern locations since it tolerates cooler soil temperatures and completes its life cycle so quickly. Other beneficial nematodes may also control weevils but these 2 species were most commonly found established in CT strawberry fields. There is no point in applying beneficial nematodes in early or mid-summer since few larvae are present.

Nematodes are living organisms and they can be killed if they are misapplied. Order nematodes ahead of time and be ready to apply them through a sprayer or irrigation soon after they arrive, refrigerating if delay is necessary. Do not apply nematodes using a sprayer with a piston pump. Use clean equipment, removing all screens finer than 50-mesh. Apply nematodes in early morning or evening in a high volume of water to already moist soil, pre-irrigating if needed. Apply another 1/4 inch of irrigation after application to wash them onto and into the soil. Although references suggest rates of several billion nematodes per acre, I found researchers and suppliers recommended 250 (if banded in the row) to 500 million per acre, at a cost of about $100-200 acre depending on volume and source. Green Spot says their formulation requires lower numbers of nematodes but the cost

ends up about the same. Paradoxically, nematodes probably work best in the worst weevil-infested fields. High populations of weevil larvae allow explosive growth in nematode populations, while low populations of larvae may not permit efficient nematode reproduction. Strawberry plants can recover their vigor remarkably well if crown feeding has not occurred and diseases haven't taken over the roots.

Root weevils cannot fly, so they infest new plantings by wandering into fields from surrounding weedy and woodland vegetation, or in large numbers from recently plowed, infested strawberry plantings. Even plantings several hundred feet away can become generally infested as a result of mass migration from plowed fields. A good rotation program with substantial distance between strawberry fields can help to manage root weevils. Also, when turning under old, infested strawberry plantings, it is critical to leave a row or two at the perimeter of the field as a trap crop to protect other plantings. Adult weevils will be intercepted in these rows before they leave the field and thus lay their eggs where the larvae will not do any damage. At the end of the season the trap rows should be turned under prior to planting winter rye. Do not spray the trap rows as this may repel weevils and result in more migration to other fields.

Some Beneficial Nematode Suppliers:

1. *Green Spot*: 603-942-8925 or www.shopgreenmethods.com
2. *Griffin Greenhouse Supplies*: 978-851-4346 or www.griffins.com
3. *Integrated Biological Control Systems*: 888-793-4227 or www.goodbug-shop.com
4. *Koppert Biologicals*: 800-928-8827 or www.koppert.com

(**Source**: Vermont Vegetable and Berry News, July 15, 2002)

Brambles

Orange Rust of Brambles

Jim Travis, Jo Rytter, Ken Hickey, PennState University

Orange rust is a fungal disease which occurs only on brambles, particularly blackberries, dewberries, and black raspberries. This disease is not known to affect red or purple raspberries. This is a systemic disease. Once the plant is infected, the entire plant is infected for life.

Symptoms

The diagnostic symptoms of orange rust occur early in the spring when the new shoots begin their growth. The new leaves are stunted, deformed, and pale green or yellowish. Waxy blisters cover the undersides of the leaves. These blisters later become bright orange and powdery, the characteristic which gives the disease its name. Canes produced on the diseased plants may appear healthy. However, these infected canes are usually spineless and do not produce blossoms. The diagnostic orange pustules will be produced on the leaves of these canes the following spring. Infected plants generally take on a bushy appearance as many short upright shoots arise from one bud.

Disease Cycle

Orange rust is caused by the fungus, Arthuriomyces peckianus, which overwinters in the diseased roots and canes. Orange rust is generally favored by low temperatures and high humidity. When the orange spore pustules mature and break open in June or July, the spores are spread to other plants by the wind. The fungus enters the plant through the leaves and grows internally through the canes, crowns, and roots. Newly infected plants seldom show symptoms until the following spring.

Orange rust is a systemic disease. Once the plant is infected, the entire plant is infected for life.

Disease Management

Many initial problems in the bramble planting can be prevented by starting with certified, disease-free nursery stock. Inspect all plants in the spring for symptoms of infection. As soon as symptoms of orange rust are detected, remove the entire plant. Remove and destroy all wild blackberries and raspberries in the area which may serve as a source of disease. No chemical control is known for this disease. Some blackberries specifically Eldorado, Raven, and Ebony King, are reported to exhibit resistance. (***Source:*** *PennState Dept. of Plant Path. Small Fruit Fact Sheet Series http://cygnus.tamu.edu/Texlab/Fruit/Blackberry/bbtop.html*)

Raspberries and Blackberries Get Fire Blight, Too

Annemiek Schilder Michigan State University

While fire blight is most common in pears and apples, it also occasionally affects raspberries and blackberries (Rubus spp.). Certain varieties (e.g. Boyne raspberries) are particularly susceptible. Losses result from fruit infection and from death of tips of primocanes. Fruit losses of 65 percent or more have reported on thornless blackberries in Illinois. Flowers, fruit, cane tips and succulent shoots become infected, initially appearing water-soaked but eventually turning brown (fruit) or purplish black (shoots and cane tips). Primocane tips often curve and take on a shepherd's crook appearance. Infections may proceed down the cane for up to eight inches and may produce abundant bacterial ooze under high moisture conditions. Flower blight symptoms may be confused with those caused by Botrytis. Infected berries do not mature. Instead, they become brown, dry and very hard, and remain attached to the pedicel. Entire fruit clusters may be infected, but generally a few berries in each cluster remain healthy.

The causal agent is the same bacterium causing fire blight in apple and pear, *Erwinia amylovora*. However, apple and pear isolates are not pathogenic on Rubus and Rubus strains infect Rubus spp. only. The bacteria are thought to overwinter on cankers on canes. Bacterial populations increase early in the spring and are moved by rain splash or insects to healthy canes and fruits. Moderately warm weather (65-77° F) and light rain enhance infection. No control measures have been developed because of the sporadic nature of the disease. However, pruning to remove infected tissues by pruning and facilitate rapid drying of the canes and foliage help reduce the likelihood of infection. If you are experiencing a persistent problem with fireblight, copper might be an option. However, crop injury may result. (***Source**: Michigan Fruit CAT Vol. 16, No. 14, July 10, 2001*)

Blueberries

Blueberry Scorch Virus Alert

Sonia Schloemann, UMass Extension

As first reported last summer, the presence of the Blueberry Scorch virus (aka Sheep Pen Hill Disease) has been confirmed in several locations in Massachusetts. It is likely, that we have this virus in other locations, as well. It is very important to note the symptoms decsribed below in order to determine if you may have this virus at your farm. Last week's mailing of Berry Notes included copies of two excellent fact sheets on Blueberry Scorch for a description of the symptoms. These fact sheets can also be found at **http://www.geocities.com/martinrr_97330/BlSVweb/Pestalert.htm**.

It is very important to determine if you have aphids feeding on your bushes, since aphids are the vectors that will transmit the virus from one plant to another. Growers should take some time now to inspect their blueberry plants for aphids by looking at the underside of the leaves on newer growth. If you notice aphids on your plants, especially if you also have noticed a blossom blight/twig blight condition selectively on 'Berkeley', 'Weymouth', 'Pemperton' or 'Dixi'. 'Blueray' appears to exhibit different symptoms where just a dramatic leaf yellowing is found. 'Bluecrop' may not exhibit very noticeable symptoms, but may suffer lower yeilds. Look at picutures of scorch in the NRAES Blueberry Production Guide or in the Blueberry Disease Compendium.

Please call me (413-545-4347) if you suspect that you may have this disease in your blueberries. We have a limited number of testing kits that can be used in the field to test sites for infections. See more about this disease from New Jersey below.

Blueberry Scorch Virus

Peter Oudemans, Rutgers University

Blueberry scorch is a virus disease that is increasing greatly in frequency in New Jersey. The pathogen causes flowers to die without being fertilized and can result in major crop losses. In Burlington and Atlantic counties fields with 70-90% of the plants infected have been observed. Thus this disease represents a serious threat to the blueberry industry.

Growers and scouts should watch for development of scorch at this time and flag all suspect bushes. Symptoms (see below) are easily seen during bloom. Growers should be aware if this disease is present on the farm and where the infected bushes are located. Mark locations of the disease on a farm map and monitor these areas next year. When suspect bushes are found they should cut back and removed. Aphid scouting and management should be made high priority in fields with infected plants.

Symptoms of the disease vary depending on the cultivar. In "Weymouth" the classic symptoms of scorched blossoms and a Phomopsis-like die-back are commonly seen. In other cultivars such as "Duke" and "Bluecrop" the blossom scorch is less common and fruit may appear to set but will not develop. The plants may also appear chlorotic (yellowing similar to nitrogen deficiency) and partially defoliate. The disease may be easier to see by standing back from the bushes rather than close inspection. Shortly after the bloom period is over plants will begin to recover. Even though symptom expression may not occur every year, infected bushes remain a source of inoculum in the field increasing the possibility for disease spread. Significant yield loss is always

A virus causes blueberry scorch. Viruses are among the smallest pathogens of plants. They cannot be cultured like bacteria and fungi and are too small to be seen through a light microscope. They are usually detected using antibodies used in kits that give a color reaction. Diagnosis by symptoms is the fastest method but often needs to be verified through a diagnostic kit. For viruses to infect a plant they must enter a living plant cell through a wound. In the case of Blueberry Scorch, aphids can carry the virus on the sucking mouthparts or the stylus and inject the virus into the cell while feeding on plant sap. Once inside the cell the virus begins to multiply and spread to other cells in the plant. Eventually, the entire

plant becomes infected and develops symptoms. Once a plant is infected it does not recover. Although infected plants may appear healthy during some years the infection is persistent and will greatly reduce berry production over the long term. Furthermore, the infected plants represent a source of inoculum that can be transmitted to healthy plants. For these reasons, it is a very good practice to remove infected plants.

Transmission of the virus is most likely by aphids. Although no experiments have been conducted to prove this directly, transmission by of the virus by aphids to other plants from infected blueberries has been accomplished. In addition, transmission of other similar viruses is also accomplished through aphid transmission. In addition, plant virologists have been unable to transmit the virus between blueberry plants using infected plant sap. This suggests that mechanical transmission by pickers, pruners, or harvesters is also unlikely. Another very important point regarding transmission is the role played by infected cuttings. For example, since mother plants are often not allowed to flower they probably do not show symptoms. If cuttings are used from these infected plants it is likely that the resulting transplants will also be infected. This is an excellent way to introduce scorch into a field. Therefore, testing mother plants for viruses is an excellent sanitary practice that will have major beneficial effects on the establishment of new fields. Testing kits are currently available for the eastern strain of the virus. (***Source**: Blueberry Bulletin, Vol. 17, No. 4, May 3, 2001*)

Grapes

Grape Cultural Practices

Hans Walter-Peterson, Cornell University

Surplus Situation

A couple of weeks ago, I was in Portland, Oregon attending the national meeting of the American Society for Enology and Viticulture. While I was there, I had the chance to talk to a few extension specialists, scientists and others familiar with the grape surplus situation in California, particularly in the Central Valley. The overall consensus was that the situation will not get any better for at least a few more years.

Folks were telling me that it is likely that the surplus situation will begin to affect some of the higher profile wine regions this year. For example, there will probably be Chardonnay grapes in Sonoma County that won't find a home in wineries this year.

Estimating Crop

Set is looking quite good for the most part here at the Fredonia lab, but there is certainly quite a bit of variation. Minimally-pruned vines here appear to have set especially well. Vines that suffered frost damage and are bearing crop on secondary shoots are generally anywhere from 1-2 weeks behind. Some growers are reporting poor set on shoots that were growing vigorously, similar to last year.

Although bloom was a few days behind average this year, we have had higher-than-normal heat accumulation since then. As a result, berry development on shoots not damaged by frost may actually be a bit ahead of normal. The final yield component to be determined each year is berry weight, and that can usually be estimated at 30 days after bloom. The other components of yield have already been determined**:**

1. Clusters per node - Determined primarily at this time last year.
2. Nodes per vine - Determined during pruning this past winter.
3. Berries per cluster - Just determined during set this year.
4. Berry weight - Won't be final until harvest, but we can estimate it in the next week or two!

At 30 days after bloom, berry weight is about 50% of its final weight. Final berry weight is controlled by genetics to some extent, however, so there's an upper limit to how big the berries will get (i.e., a 3.5 gram berry would be pretty extreme). Terry Bates wrote an excellent article on this topic last year. http://lenewa.netsync.net/public/Bates/BatesBerry_Weight2001.htm or go to http://lenewa.netsync.net/public/Bates/BatesBerry_Weight2001.htm to see the article.

If you want to try estimating your crop this year, take a sample 'harvest' from a couple of panels and weigh the berries. Multiply by two to get an estimate of the final yield from that number of vines you sampled. Then extrapolate that weight over an acre of vineyard (# of vines per acre based on your row and vine spacing) to get your yield per acre. You may need to make adjustments based on how many skips you have, how far along you think you are on berry growth (more or less than 50% berry weight?), and the uniformity of the vineyard where the sample was taken. This last factor may make your estimates much less accurate, especially in blocks where frost damage was highly variable.(***Source**: Lake Erie Regional Grape Program Crop Update, July 9, 2002*)

Scouting for European Red Mite

Alice Wise, Cornell University

Use the following general guidelines to judge the need for treatment. Mites are one of the few pests that lend themselves to systematic scouting. Even though scouting is time consuming, it is incumbent upon growers to try to minimize pesticide use. One way to do that is to base treatment decisions on scouting results.

• Timing of scouting: Now through late August. Populations will crash with cooler weather in September. Scout at least every other week, more often if using Sevin, if the weather stays hot or if you see bronzing.

• Scouting technique: The goal is to collective a representative sample in a short period of time. Collect = 50 leaves/block, more for larger blocks. Decide on your sampling strategy in advance. Walk every 6th row (or 5th or . . .). Stop at regular intervals, every 5th panel for example. Collect 2 or 3 leaves/vine. Continue until the area you wish to scout is covered. Leaves can be collected and kept in a cooler or the fridge until you are ready to examine them later in the day (not later that week).

• Tissue to collect: At this time of year, mites are generally in the 1-2 ft. directly above the cluster zone. As the season progresses and/or infestations worsen, they will spread up the shoot. Avoid leaves on laterals, focus on leaves from primary and secondary shoots.

• Examining the leaf: A 10x lens or field scope is useful. Examine upper and lower leaf surfaces for motile mites. Due to overlapping generations, mites may range in color from orange to deep red. Bristly white hairs may be seen on older mites. If unsure about whether you're looking at a mite or not, try to get the thing to move -- specks of dirt or debris aren't very mobile. Clear, round, orangish immobile dots are probably mite eggs especially if congregated along major leaf veins. Don't count those in your tally.

• Tally the results: Trying to count the number of mites/leaf on 100 leaves is impossible work. Instead, count the number of leaves with motile mites vs. the number without. It doesn't matter if there is 1 mite or 20. A presence/absence sampling method is infinitely easier.

• Spray threshold: Without solid data, a best guess is 50-60% infested leaves. If vines are small or otherwise stressed, a lower threshold, maybe 40-50%, is prudent. Nyrop and English-Loeb, Geneva entomologists, are conducting research this summer on the establishment thresholds.

• Spray materials: Kelthane, Vendex and Agrimek are the primary options. In the interest of resistance management, alternate what is used from year to year. Back to back applications of Kelthane may be necessary. Opinions vary on why this is necessary - either resistance is the culprit or in hot weather generation time is short so that a follow-up treatment is necessary to get newly hatched mites. Based on last year's experience, a high rate of Agrimek is necessary at this time of year. The expense of this makes it an unattractive option. M-Pede, an insecticidal soap, claims to control mites. Work on apples suggests otherwise. JMS Stylet Oil is labeled as a mite material. A number of local growers have found Stylet Oil does a good job on mites if (and that's a big "if") coverage is excellent. The biggest challenge for summer use of Stylet Oil is the fact that it should not be applied in = 85°F. Leaf scorching has been seen where this limit has been tested. Stylet Oil is also incompatible with a number of fungicides, Kelthane and certain foliar nutrients. There is also research to suggest that Stylet Oil applied in the latter part of the season will depress Brix accummulation.

• The good news: CCE entomologist Dan Gilrein reports that a number of new reduced risk miticides are in the pipeline. Hopefully, a few of these will find their way to Long Island. (***Source**: LI Fruit & Veg. Update, No. 17, July 3, 2002*)

General

Foliar Leaf Analysis

Marvin Pritts, Cornell University

Plant tissue analysis is used to measure directly the amount of nutrients in various plant parts, and for established perennial crops, is usually a better indicator of nutrient status than a soil test. Recommendations are based on the levels of 13 essential nutrients in your leaves at a specific time of the year (usually mid-summer). Unlike visual diagnoses, foliar nutrient analysis can alert the grower when nutrient levels are approaching deficiency so corrective action can be taken before problems occur. They also alert the grower if fertilizer is being over-applied. Unlike soil tests, foliar analysis provides accurate results for all essential mineral nutrients, not just for the 4 or 5 reported in soil tests.

For **strawberries**, recommendations are based on newly expanded leaves collected after renovation in late July or early August. Other sampling times or plant parts may prove to be more appropriate for certain nutrients, but until more detailed studies are done, foliar samples collected in mid-

summer are the standard because nutrient levels fluctuate little then. For **raspberries**, select fully expanded primocane leaves in early August. For **blueberries**, select young leaves exposed to full sun in late July.

Collect at least 50 leaves, remove their petioles, and wash them in distilled water. Dry them, place them in a paper bag, and send them to the laboratory for analysis. Samples should be representative of the entire field. If a particular area of the field looks poor or has been fertilized differently from the rest, sample it separately. A leaf analysis, including nitrogen, costs $28. Results should return from the lab within 2 - 3 weeks. Many nutrients can be applied in fall, and the recommendations will provide details on when to apply particular nutrient fertilizers and in what quantities. The leaf analysis is accurate only if the soil pH is within an acceptable range (5.5 - 7.0 for raspberries and strawberries; 4.0 - 5.0 for blueberries).

Conduct a foliar tissue analysis every other year. The soil pH should be monitored regularly, and a complete soil test performed every three years. Always be alert for any unusual appearance of leaves, and for unexplained reductions in growth or yield. Sampling kits for are available through Cornell Cooperative Extension educators. You can also obtain sampling kits directly from the lab.

Nutrient and Elemental Analysis Lab
Dept. of Horticulture
Cornell University
Ithaca, NY 14853
(607) 255-1785.
(***Source**: New York Berry News, Vol 1., No. 5*)

Editors Note: More listings of tissue testing labs include:

UMass Soil and Tissue Testing Lab
West Experiment Station/UMass
Amherst, MA 01003
413-545-2311
http://www.umass.edu/plsoils/soiltest/
Fee: $18

UMaine Analytical Laboratory
5722 Deering Hal, Rm 407
Orono, MA 04460
207-581-2945
http://anlab.umesci.maine.edu
Fee: $25

UNH Analytical Services Lab
Spaulding Hall Room G-54
38 College Rd.
Durham, NH 03824
603-862-3210
http://aslan.unh.edu/asl
Fee: $22

UVM Ag. & Environ. Testing Lab
219 Hills Bldg./UVM
Burlington, VT 05405
802-656-3030
http://pss.uvm.edu/ag-testing/
Fee: $20

Upcoming Meetings

July 25, 2002

UMass Extension Summer Twilight Meeting
Hamilton Orchards, off Rt. 202 in New Salem Massachusetts
5:00 – 7:30
Contact: Sonia Schloemann 413-545-4347
1 Pesticide Recertification Credit

August 14 - 16

NASGA's 5th Annual Summer Bus Tour
Southwest Michigan & Northern Indiana
Contact: Erin Griebe at: 810-229-9407
Or NASGAHQ@aol.com

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.