

Berry Notes

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Prepared by the University of Massachusetts Fruit Team

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IN THIS ISSUE:

MESSAGE FROM THE EDITOR

STRAWBERRY

- ❖ Highlights of the North American Strawberry Growers Summer Tour: Quebec
- ❖ The Organic Way - Some Ideas for Weed Management in Strawberries

BRAMBLES

- ❖ Raspberry Research Update

BLUEBERRIES

- ❖ The Organic Way - Preventative Disease Management for Highbush Blueberries

GRAPES

- ❖ Grape Fungicide Review (Part 2 or a 2-Part Series)
- ❖ Hilling Up and Taking Down: A Lesson from Jan Waltz, Waltz Vineyard, Lancaster, PA

GENERAL INFORMATION

- ❖ Berry Crops in Cornell's Forest Farming Project
- ❖ Agricultural Environmental Enhancement Program: *Water Quality Protection Funding Available to Farmers*
- ❖ "Does Your Town Need an Agricultural Commission?"
- ❖ Agricultural Commissions On The Web
- ❖ International Buyers to Meet with Suppliers in Boston
- ❖ New MDAR Business Planning Sessions
- ❖ 'Local Hero' Campaign now Enrolling Members for 2005 Season

UPCOMING MEETINGS

Message from the Editor:

Last Issue for 2004: This is the last issue of Massachusetts Berry Notes for 2004. Attached is an evaluation form designed to provide feedback on the content and delivery of this newsletter for this year. Your comments about what worked and what didn't, what was useful to you and what was missing, will help to guide improvements for the coming year. Please send your responses to me either by email (sgs@umext.umass.edu) or US mail (Sonia Schloemann, 25 West Experiment Station/UMass, Amherst, MA 01003).

Subscription Renewals: Subscriptions for Massachusetts Berry Notes for 2005 can be ordered by using the attached Subscription Renewal Form. As a result of the generous underwriting by Tim and Nathan Nourse at Nourse Farms (www.noursefarms.com), the subscription cost for 2005 will only be \$10. We thank Nourse Farms for their support for our programming. Delivery of Berry Notes will continue to be via email distribution, but we will also offer fax delivery as an alternative, for those who would prefer it. Please note the mode of delivery you prefer on your subscription order form. Surface mail delivery will not be offered.

New England Fruit and Vegetable Conference: The New England Fruit and Vegetable Conference and Trade Show was held last week in Manchester New Hampshire. This conference was a collaboration between the New England Fruit Meetings (formerly held annually in Sturbridge, MA in January) and the New England Vegetable and Berry Growers' Association December Winter meeting. The meeting was well attended with information presented on a variety of topics. Proceedings from the meeting will be published in the coming months. Availability of the proceedings will be announced in this newsletter. The next NEV&BGA winter meeting will be held on Friday, January 7, 2005 in Chicopee MA. See the meetings section of this newsletter for more details.

STRAWBERRY

Highlights of the North American Strawberry Growers Summer Tour: Quebec

Pam Fisher, Ontario Ministry of Agriculture and Food

About 80 growers, plant propagators, researchers, provincial and industry specialists from North America attended this 2-day tour. We visited 11 farms and markets, showcasing production of strawberry plants, blueberries, day neutral strawberries, black currants, sea buckthorn, plasticulture berry production, and on-farm marketing. All the sites were an easy drive from Quebec city, and included the scenic Ile d'Orleans. The tour was organized by Luc Urbain, Berry Crop Specialist, for the Ministry of Agriculture and Fisheries in Quebec, MAPAQ. Highlights of the tour were many.

A few are included here:

Black currant production:

Hand harvest for this small planting (less than 10 acres) once took over 30 people. Now, a machine (BRAUD 2720) can harvest 2000-3000 lbs/day. Black currants are not hard to grow here, it is easy to grow more than are needed for value-added markets. Black currants are well suited to the climate on Ile d'Orleans, which has warm, but not hot summers, and cold winters. Black currants bloom early and are very susceptible to spring frosts. Here the crop is protected from spring frosts by the sloping elevation and the moderating effect of the St. Lawrence River on the climate.

Strawberries: Some growers have successfully adapted plasticulture for June bearing strawberry production (Figure 2).



Figure 2: June bearing strawberries in plasticulture system.



Figure 1: Self propelled Braud 2720 harvester, for black currant harvest. Features pulsating arms, conveyer cups, and 4 aspirators to remove leaves and crop debris. (Value \$150,000 new).

Components of the plasticulture system include:

- Raised beds, sub surface drip irrigation, black plastic mulch
- Double row, high density planting, 16-22,000 plants/acre
 - A small crop is harvested in the year of planting (4-5000 lbs/acre)
 - Larger crop of high quality fruit is harvested the following year (8000-15000 lb/acre).
 - A hand planting tool is used to set dormant bare root plants through the plastic, a mechanical planter is being tested for plug plants. (Figure 3).

The growers we visited favored Darselect strawberry (June bearing), for its good flavor, and very high yields in plasticulture systems. The quality is also good, although susceptibility to leaf

disease is extreme. Jewel and Cabot are also popular June-bearing varieties for plasticulture.

About 250 acres of day neutral strawberries are grown in Quebec (Ontario has less than 100). The success of this production system is due to the moderate summer temperatures (Seascape will stop blooming if it's too hot in summer) and the proximity to markets. (Figure 4)

For both day-neutral and June bearing varieties, growers are experimenting with different plant types for establishing the planting. In addition to

the traditional "frigo" plant (bare root, dormant, cold stored), Grade A plants, or even A+ plants (with larger crown size) are used on a small scale to increase early production. Another experimental option is plug plants, for establishing both day neutral and June bearing varieties in



Figure 3: Planter for strawberry plant plugs.



Figure 4: Day neutral strawberries "Seascape"

the late summer. Three plant nurseries in Quebec are providing limited quantities of plug plants in August for late summer plasticulture planting. (Figure 5)

Where plug plants are planted in late summer, a row cover is used in October to help promote flower bud initiation and plant establishment.

Seabuckthorn: Helene Rousseau is a researcher with the Institute de Recherche et de Developpement en Agroenvironnement (IRDA). She is studying Seabuckthorn, as potential new crop with nutraceutical uses. (Figure 6)

Objectives of her research include

- Find a suitable thornless cultivar for mechanical harvesting
- Evaluate different harvesting techniques
- Determine better cultivars for yield, fruit quality, oil production, and pest resistance.

There is no convenient method for harvesting this crop at present. Sea Buckthorn berries are difficult to harvest. One method is to cut off entire branches, and freeze them until berries drop off (Figure 6).

Blueberries: The highbush blueberry industry is growing in Quebec. In spite of the cold climate, the plantings overwinter successfully under a consistent snow cover. Although the soil pH is naturally low in much of Quebec, peat moss and elemental sulfur are used to amend the planting site. The peat moss is incorporated the fall before planting, so that is thoroughly wet at planting time. Wood chip mulch is used after planting, to moderate soil temperatures and moisture. Growers use snowplows to pile additional



Figure 5: Plug plants ready for planting

snow on top of bushes, to prevent winter injury. Branches are killed above the snowline during cold winters (i.e. 2002-2003), and plant size remains small compared to plants in southern Ontario. (Figure 7)

- "Reeka" looks promising, although its branching habit may be too high.
- "Duke" is very productive.
- "Patriot", propagated from tissue culture, is too vigorous, bare root cuttings are preferred for this variety.

Fertigation through trickle irrigation systems is working well. Half of the recommended N is applied broadcast in early spring, the rest is applied by fertigation, over 8-10 weeks.

Value-added marketing: Several interesting new products (black currant sorbet, raspberry cookie) were being marketed successfully at farm markets. Fresh raspberries, blueberries, and strawberries were marketed together, in an assortment of container sizes, making it difficult for the customer to compare prices (Figure 8). A 1/2 liter basket was popular for raspberries.

Raspberries: The fall bearing variety "Pathfinder" was apparently productive (6500 kg/ha this year) and 2 weeks earlier than Autumn Britten in Quebec. The short shelf life for this variety (less than 12 hrs) limits sales to local retail or roadside market only! (Pathfinder is not common in Ontario. Apparently it is an early ripening primocane fruiting type for short season, described as having short canes, moderate vigor, and medium sized fruit with poor flavor. It is a cross between August Red and *R. strigosus*.



Figure 6: Sea Buckthorn berries are difficult to harvest. One method is to cut off entire branches, and freeze them until berries drop off.



Figure 7: Established highbush blueberry planting: plants are relatively short due to winter injury above the snow level.



Figure 8: An assortment of berries in 6 x 1/2 pt containers, for \$10. Using containers of different sizes makes it hard to compare prices at different markets/stores.

August Red was from New Hampshire.)

The Ontario Berry Grower, Vol. 7, November 2004)

Conclusion: If you are not a member of the North American Strawberry Growers Association, look them

The Organic Way - Some Ideas for Weed Management in Strawberries

Elsa Sanchez and Kathy Demchak, Penn State University

Weed management is difficult in strawberry production, particularly in organic strawberry production where the few herbicides that are available for non-organic production are generally prohibited. This article describes some alternative weed management strategies to herbicides and mechanical and hand cultivation. Good site selection is an important weed management strategy. Select a site with minimal weeds and suppress the weeds in the site prior to planting. Green manure crops are good options for weed suppression. Select green manures that establish quickly and have large above ground canopies.

Quite a bit of research on weed management has been conducted at Cornell University. In one study on matted-row strawberries, critical times during the growing season when plants are most susceptible to weed competition were determined. Weed management efforts can be intensified during those key times. As expected, a key time for weed management is in the first few months during plant establishment. When weeds were not managed for longer than one month following planting, yield and runner production were lower than when plots were kept weed-free during the same time. When weeds were not managed late in the growing season (September) there was little effect on

yield and the number of runners compared to when plots were kept weed-free during the same time. While this indicates that early season weed management is most critical when establishing a new planting, key times of the year for weed management may vary depending on the weed species typically encountered and on soil moisture levels. In the study predominant weeds encountered included yellow nutsedge, common groundsel, purslane and numerous grass species. In no case should weeds be allowed to go to seed and suppress perennial weeds, regardless of the time of year, to prevent them from establishing.

In another study, the practice of growing different living mulches in the alleyways of strawberries in matted-row production was examined. Sudangrass, tall fescue or marigolds were direct seeded during renovation. Researchers found sudangrass to be the best of the three living mulch species for weed management because it rapidly established, was relatively drought tolerant and had a low fertility need. A disadvantage to the sudangrass was that it grew taller than the strawberry plants. However, to contend with this problem, it was mowed as it exceeded the height of the strawberry plants. Another drawback to using sudangrass was that a high level of strawberry clippers was observed compared to the other treatments.

Mulches can also be effective for weed management. In another study at Cornell, commercially available Planter's paper was found to be effective for weed management during the establishment year compared to not using mulch. Fabric weed barriers also are a good option for weed management. If using straw mulch for winter protection of the plants, placing the straw in the

alleyways in the spring offers some weed control. If using the plasticulture system, the plastic may be advantageous for limiting weeds. All of these options should be carefully evaluated for suitability on individual farms prior to using them. (*Source: Vegetable and Small Fruit Gazette, Vol. 8 No. 12, December 2004.*)

RASPBERRY

Raspberry Research Update

Brian R. Smith, University of Wisconsin-River Falls

The general objective of this program is to develop new floricanes and primocane-fruiting cultivars with improved characteristics for commercial growers in the eastern and midwestern United States and Canada.

The role of the University of Wisconsin-River Falls is to serve as winter hardiness testing site for the WI/ "Five Aces" Cooperative Bramble Breeding Program. Hybridization was conducted at "Five Aces Breeding" in Maryland. Seedlings were germinated, grown to transplant size, and then sent to UW-River Falls, field transplanted and selected over a 2 to 4 year period. Breeding and advanced selections have been sent to "Five Aces Breeding" for propagation via apical meristems/shoot tips (tissue culture) and for further hybridization use. Advanced selections have been sent to appropriate cooperating sites for further testing. Appropriate advanced selections with cultivar potential for Wisconsin are being tested at UW-River Falls.

Progress to Date

Support for this project has been provided by Five Aces Breeding, the Wisconsin Berry Growers Association, NABGA, and the Wisconsin Department of Agriculture. This represents the eleventh year of UW-River Falls' involvement in the Cooperative Bramble Breeding Program. Over the years, a total of 10,558 seedlings have been planted at UW-River Falls from which 59 advanced selections have been made. In Summer 2003, 826 seedlings were planted, representing 11 progenies. Seedlings are planted on a 2' x 8' spacing within and between rows, respectively. Advanced selections are planted in replicated or observational trials.

Currently, all the bramble seedlings (3,856) planted since 2001 still remain in the field as sources from which to select for potential cultivar and breeding material.

The past two years were devastating to the bramble plantings. On May 1, 2001, a severe storm dropped marble to baseball-sized hail for 20 minutes, ruining what was left of the floricanes. The winter of 2001-2002 was equally devastating. An extremely mild

winter (only -4° in December-February), followed by a very cold March and record April snowfall killed most floricanes again. The winter of 2002- 2003 also caused considerable injury. Although characterized by generally mild temperatures, severe fluctuations from 54o on January 8 to -1o on Jan 11 in conjunction with record frost depths (10') killed the floricanes on all cultivars except 'Killarney' and 'Boyne' and eliminated most of the seedlings also.

Twenty seedling selections were made this year (table omitted in this newsletter).

Raspberry Genotype Trials

A 3-replicate, 29-genotype, floricanes/ primocane bramble performance trial was established at UW-River Falls this year. Observational plots were also established for ten advanced selections.

Table 1. Selections in Raspberry Genotype Trials

Floricanes – fruiting	Primocane - fruiting
Boyne	Anne
Encore	Autumn Bliss
Esta	Autumn Britten
Festival	Autumn Byrd
K81-6	Caroline
Killarney	Dinkum
NY 253	Heritage
NY 258	Himbo Top
NY 283	Joan J
Nova	Kiwi Gold
OAM – W2	QEG
OAY – F1	Polana
PCS – 1	Ruby
PCS – 2	Summit
Prelude	
Royalty (purple)	
MacBlack (black)	
Cancanska (blackberry)	

(*Source: North American Bramble Growers Bramble Newsletter, Autumn, 2004*)

BLUEBERRY

The Organic Way - Preventative Disease Management for Highbush Blueberries

Elsa Sanchez and Kathy Demchak, Penn State University

The first step in preventative management of blueberry diseases is to become familiarized with the diseases that blueberry plants are susceptible to as well as the environmental factors that favor disease development. Management strategies can then be developed specifically for individual farms or fields within a farm. Selecting disease free sites and planting stock are first steps in preventative disease management. The primary symptoms of several diseases caused by fungi are described below along with preventative strategies for disease management.

Phomopsis Twig Blight and Canker (causal agent is *Phomopsis vaccinii*)

Disease Symptoms: Symptoms first appear on 1-year-old twigs with flower buds at bud break. Infected twigs may die back or suddenly wilt. Infected stems may have reddish-brown lesions that are about 1 to 4 inches long. Brownish cankers 4 to 8 inches long may be observed initially during in the summer on 1-, 2- or 3-year-old canes and can result in the death of the entire canes. Reddish-brown, brittle, dead leaves will persist on dead canes. Development of this disease is favored by wet weather, especially in the early part of the growing season. Infective spores are spread by splashing rain.

Preventative Management Strategies: Plant resistant and/or tolerant cultivars. ‘Bluetta’ is a cultivar with resistance and ‘Coville’, ‘Earliblue’, ‘Elliott’, ‘Nelson’ and ‘Rancocas’ have tolerance. Remove infected canes to promote drying of the plant canopy. This also serves to remove possible sources of inoculum and therefore slow spread of the disease. Use irrigation and fertilization management that promote early hardening off (don’t irrigate or fertilize too late in season) of the blueberry plants.

Botryosphaeria Stem Canker (causal agent is *Botryosphaeria cortices*)

Disease Symptoms: Early symptoms of this disease include yellowing or reddening then dying of the leaves of one or more canes of 1- to 2-year-old plants. This will be followed by the death of infected branches with reddish-brown, brittle, necrotic leaves persisting. It is common to observe infected canes along side of seemingly healthy canes. Cutting a stem, with healthy and infected tissue, length-wise will reveal brown discoloration of the infected tissue while the healthy portion of the stem will have white or cream colored

tissue. Plants can become infected anytime throughout the growing season. Development of this disease is favored by wet weather, especially in late spring. Infective spores are spread by wind.

Preventative Management Strategies: Remove infected plants to eliminate possible sources of inoculum and therefore further spread of the disease. Use good sanitation (clean tools and equipment) to avoid spreading the disease.

Fusicoccum Canker (causal agent is *Fusicoccum putrefaciens*)

Disease Symptoms: In the fall, initial symptoms of this disease are tiny water-soaked lesions, on the lower third of 1- or 2-year-old canes, which turn red by December. The following spring and summer the lesions develop into cankers resembling a target. Each canker is generally centered on a leaf scar. During the summer, generally when fruit are present, leaves on stems with cankers will wilt, die and persist on the stem. Canes can be re-infected throughout the growing season. Disease development is favored by wet conditions.

Preventative Management Strategies: Plant cultivars with tolerance or resistance to this disease. For example, ‘Rancocas’ has resistance and ‘Berkeley’, ‘Burlington’ and ‘Rubel’ have tolerance. Prune out infected stems to promote good air circulation within the plant canopy and also to remove inoculum for further spread of the disease. Other methods that promote good air circulation within the planting include proper pruning and good weed management.

Phytophthora Root Rot (causal agent is *Phytophthora cinnamomi*)

Disease Symptoms: Leaves of plants diseased with Phytophthora will yellow, turn red-brown, die and persist on the plant. Infected plants will stop producing new growth. Plants can die rapidly when conditions favoring disease development exist. This disease is caused by a soil borne, which requires free water for the spread of infective spores.

Preventative Management Strategies: Select a site with good drainage and avoid planting in low spots in the field to prevent soil water logging and the spread of this disease. Use good moisture management (for example, do not irrigate while it is raining) also to avoid spread of the disease.

Botrytis Blight (causal agent is *Botrytis cinerea*)

Disease Symptoms: Botrytis blight can affect flowers, leaves, twigs and fruit. Generally the flowers are infected first. Infected flowers turn brownish in color and can be covered with gray mycelium that can have black spores. Leaves may become infected next, developing brown necrotic lesions. Ripening fruit can also be diseased with Botrytis Blight and can be identified by gray mycelium and spores growing on the fruit. Cool temperatures and high relative humidity favor disease development.

Preventative Management Strategies: Avoid using excess fertilizer in the spring because it stimulates excess growth of susceptible young tissues. Promote good air circulation within the planting to encourage low relative humidity within the plant canopy. For example, use good pruning techniques, weed management and plant spacing.

Mummy Berry (causal agent is *Monilinia vaccinii-corymbosi*)

Disease Symptoms: In the early spring, leaves and young shoots infected with the fungus causing Mummy Berry droop, turn brown and die. Diseased fruit will shrivel or mummify turning from blue to tan in color. The fruit may also emit an odor similar to fermented dark tea. The berries that are mummified will fall off of the plant. The following spring the fungus causing Mummy Berry will produce cup-like spore-bearing structures called apothecia from the mummified berries on the ground.

Preventative Management Strategies: Plant cultivars having resistance or tolerance. ‘Bluejay’, ‘Burlington’, ‘Darrow’, ‘Duke’, ‘Elliott’, ‘Lateblue’, ‘Northblue’ and ‘Northsky’ have resistance to Mummy Berry and ‘Bluecrop’, ‘Bluetta’, ‘Collins’, ‘Coville’, ‘Rancocas’ and ‘Spartan’ have tolerance. Remove old berries from the plant and fallen leaves and berries from the planting because they can be infected and spread infective

spores. Another option is to cover old berries on the ground with 2 inches of soil or mulch before flowering to prevent infective spores from being spread.

Alternaria Leaf Spot and Fruit Rot (causal agent is *Alternaria tenuissima*)

Disease Symptoms: Leaves will develop circular to irregular light brown to tan spots with a reddish border. Infection by the fungus that causes Alternaria Fruit Rot begins at the blossom end of the fruit. As the fruit ripen, black spores can be seen and the fruit will become watery or leaky. Disease development is favored by cool, wet weather in the spring.

Preventative Management Strategies: Promote good air circulation within the planting to encourage drying within the plant canopy. For example, use good pruning techniques, weed management and plant spacing. Cool berries immediately after harvesting to preserve fruit quality. Use good sanitation (clean tools and equipment) to avoid spreading the disease. Adjust harvesting schedules to avoid over ripe fruit on the plants that favors disease development.

Anthracnose (causal agent is *Colletotrichum gloeosporioides*)

Disease Symptoms: Signs and symptoms of Anthracnose are found primarily on the flowers and fruit. Infected flowers turn brownish to blackish in color. As the fruit ripen, sunken spots at the blossom end may develop. White to light pink mycelia may also be present. Disease development is favored by high moisture in the plant canopy.

Preventative Management Strategies: Plant cultivars with resistance, including ‘Elliott’ and ‘Little Giant’. Promote good air circulation within the planting to encourage drying within the plant canopy. For example, use good pruning techniques, weed management and plant spacing. (Source: *Vegetable and Small Fruit Gazette*, Vol. 8 No. 11, November 2004.)

GRAPE

Grape Fungicide Review (Part 2 or a 2-Part Series):

Alice Wise and Wayne Wilcox, Cornell University

[Editors Note: This is a continuation of an article that appeared in the Nov. issue of Berry Notes: www.umass.edu/frUITadvisor/berrynotes/bn1516abcd.pdf]

Strobilurins – Systemic materials labeled for control of PM, DM, BR though efficacy against specific diseases varies among materials. All are only fair on PH. The development of PM resistance on LI and in other regions of NY makes this group of limited usefulness

for PM control. Still, the BR and DM control offered by Abound can be useful.

Abound – A reduced risk product that is still useful as a BR and DM protectant. Tank mix with sulfur or other PM protectant to get around the resistance issue.

Sovran – Only modest DM control. Likely to be replaced in the marketplace by new product Pristine upon NYS approval (currently in review).

Flint – Long considered the Cadillac PM material, the development of resistance makes it risky to use Flint alone for PM control.

Botrytis materials – All protectants, limited array of materials, need to be used with caution as all are prone to resistance. Probably the biggest need for new chemistry. One such material received EPA registration in 2004 and is currently being reviewed by NYSDEC for use in 2005.

Vanguard – Currently the best option for Botrytis control. A protectant that is absorbed into berries (i.e. it is rainfast), has limited postinfection control. Resistance is a huge concern with this material, follow suggestions in the Pest Mgt. Guidelines. A reduced- risk material.

Elevate – Also a reduced risk material, not chemically related to Vanguard, making it useful in a rotational program. Elevate is absorbed into the waxy cuticle of the berry, making it rainfast with a few hours after application. A protectant only, no postinfection activity. Not as resistance prone as Vanguard but the risk looms.

Rovral – Though the existence of resistance has never been formally proven, several years ago the efficacy of Rovral declined to the point where it was not a viable option on LI. Several growers have attempted to reincorporate Rovral into the rotation with limited success.

Alternative products – Check individual labels to be certain – many of these products qualify as organic.

Phosphorous acid products – a systemic material, that is, it is absorbed by leaf (and probably fruit), highly mobile in the plant, accumulating in roots, shoot tips and possibly fruit. Post-infection activity – up to 4-5 days on young leaves, less on older leaves. Up to about a week of residual activity (protectant). Applications to active lesions does not kill them, but reduces their ability to produce spores that spread the disease.

MKP, Nutrol (monopotassium phosphate) – chemically classified as a “salt” (they break apart and

dissolve in water). Work primarily as eradicants of young developing powdery mildew colonies with little or no residual (protectant) activity.

These materials will not rescue well established PM infections.

Kaligreen, Armicarb (potassium bicarbonate) - ditto

Oxidate (hydrogen dioxide) – A broad spectrum biocide (better known as hydrogen peroxide) labeled for control of BR, DM, PM, BOT and sour rot. Data and experience against diseases other than PM are extremely limited. Local experience has been that Oxidate is most effective if used as a postinfection treatment for PM, as would be expected from its mode of action (a topical "disinfectant"). Like other materials, it cannot eradicate a raging infection. Tried by several growers for sour rot, Oxidate did not appear to have any effect. Given the need for a few sour rot control options, we will be investigating timing, rates etc. in the coming seasons.

JMS Stylet Oil – Revered by some, despised by others. Stylet Oil has some very good qualities but is tricky to use. It is incompatible with a number of commonly used materials plus it cannot be applied when temps get into the mid 80's. It is primarily a PM material with suppression of European red mites. Early season, it is often tank mixed with mancozeb. Many feel this is an important component of early season ERM control. After bloom, its use is discouraged due to findings that summer use of Stylet Oil can reduced Brix accumulation. Several managers, the research vineyard included, use it as an end of season spray to eradicate active PM lesions and reduce the number of overwintering PM spores. There is an organic formulation, making it an attractive option for growers going the low impact route.

Serenade – A biological material labeled for control of PM and sour rot. It is good but not great for PM. It may have some use when alternated with more effective products such as sulfur. Through both trials and field observations, it has not worked well vs. sour rot. (*Source: LI Fruit & Vegetable Update Nov-Dec 2004/2*)

Hilling Up and Taking Down: A Lesson from Jan Waltz, Waltz Vineyard, Lancaster, PA

Mark Chien, PennState University

Hilling up and taking down is right up there with filling out your income tax among things that growers do not enjoy doing. But the past two winters are painful reminders of the climate challenges to vinifera viticulture in our region and the wisdom of old in protecting those tender graft unions. A comprehensive survey done by Dr. Tim Martinson, extension viticulture specialist in the Finger Lakes revealed that about 25 percent of vinifera acreage by the lakes was killed outright by winter injury in 2004. There are a

variety of explanations for the damage, but clearly, those who hilled up their vines fared better under these conditions. When you look at the loss numbers extrapolated out into the wine, not hilling up cannot be justified.

Jan and Kim Waltz own Waltz Vineyard in Manheim, PA (Lancaster County). It's not the coldest place in the East but they have taken the precaution of hilling up their vines from the first year, and while they have suffered trunk and bud injury, especially in 2001, 2003, and 2004, they have not

lost vines entirely due to their precautions. Jan is one of our best growers. He farms Cabernet Sauvignon and Merlot on Scott Henry and is well known among wine makers in the region for his superb fruit, and his prices reflect that quality.

The key to successful hilling up and (especially!) taking down are straight rows and straight trunks. Here is a strong argument for laser planting, which offers the additional value of uniform graft union position from the surface. Trunks generally need to be straight from all angles, but if they are to bend out of the 90° position, they should do so in the vine row vertical plane. Sensors are non-judgmental so like all things mechanical, they appreciate uniformity if they are to do their jobs well. As trunks move further out into the row middles, so does the grape hoe, making your hilling up process more difficult and the take down near impossible. That means, when planting, trunks need to be rigorously trained using a training stake and frequent ties. New vines can and should be hilled up from the first year and for a sensor hoe to work, it must have a pencil rod or rebar to activate.

The type of hoe is important. Frankly, the venerable Green Hoe can do a fine job of hilling up, but doesn't perform as well taking down. It is generally manually operated which, according to Jan, is a slower and less effective way to perform this task. Same goes for the Clemens. Jan likes his Braun multi-purpose hoe for weed control and graft protection. The machine was purchased from H&W Equipment in Niagara-on-the-Lake, Ontario - <http://www.vineyardmachines.com/>. Hans and Wolfgang Woerthle have provided excellent equipment and services to the vineyard industry all along the East Coast and Canada. The hoe can be front, hip or rear mounted on one side or two. Double sides require absolutely straight rows and a skilled tractor operator. The standard set up is the single side mounted hoe which is easy to operate and very accurate. The Braun is a lighter duty machine and subject to damage if it hits a rock. There is no break-away system so it is possible to bend shafts. It has some vertical play, so rocks and obstacles can be ridden over. Jan said the entire system, including a variety of blades needed for the multiple tasks and a rear mounted frame cost less than \$5000. Before you scream, think of the value of the vines, then the grapes, then the wines. You can scream while you write the check.

As I mentioned, there is a special blade for hilling up, not unlike a small moldboard plow and one for taking down. In the spring, the take down blade removes the biggest section of the berm, leaving a small ridge down the middle. Jan will leave this to dry for a week or two then uses the grape blade to take this down, along with the small mound left around each vine. It is critical to

remove this soil so the vine cannot scion root. Once you are accomplished at this, you won't need any hand follow-up work around the vines. Jan has observed that young vines, especially those with crooked graft unions, tend to scion root more readily than older vines so it's very important to keep the graft union clean in the first five years of hilling up. After that, there will be little scion rooting.

When planting, Jan encourage growers to make sure the graft union is straight and about 2-3 inches above the soil surface. Recommendations are often made for 3-4", but this makes it difficult to fully cover. The thickness of the dirt mound over the graft will determine the amount of protection it receives from cold air. A snow cover adds insulation and is definitely helpful, but can't be counted upon. Ideally you are mounding up to 2-4" above the graft union. Remember, the dirt will settle with time so build up your initial berm higher than is actually required.

Weeds are generally not an issue with the hilling up process, unless they are woody and over two feet tall. The blade is like a plow and will cut and bury weeds, which decompose over the winter.

For Finger Lakes growers, a day trip to the Niagara Peninsula would be tremendously helpful. Some of the larger vineyards start hilling up in early September. A return trip in the spring can yield valuable lessons in taking down. All vinifera vines are hilled up. In SE PA, Jan is hilling up by the end of October, after the leaves have dropped. Soil condition will affect how well the soil rolls and stays in place, so try to get it at the right time – moist but not too wet or dry.

Jan can hill up at 4-5 mph and do about an acre in 30 minutes. It takes some speed to roll the soil up on the vine properly, so you don't want to drive too slow. There are hydraulic side slope adjustments that are essential to keep the berm even on hilly terrain. It is clearly an easier process on flat ground. When hilling up, the blade is about 6" from the vine. When taking down, the blade can be right up against the vine. Both can be dangerous for the vines long term health so a careful inspection of work should be done. Get off the tractor and look at vines to be sure they are unharmed. In general, Jan says that more damage is done to vines when hoeing weeds than by the winter protection process.

Rocky soils, of course, are not ideal for the grape hoe. Clay and silt loams, soils with sand, and lighter clays work well. Heavy clays can be difficult to work. Soils with smaller rocks are generally okay. Large rocks can be a problem for this and other machinery.

As an extension agent, I urge vinifera growers from SE PA and northward to hill up their valuable vines, especially in vulnerable sites. It is worth the time and effort. And if you do it right, that can be minimal. Jan is a good example of that fact. (*Source: PA Wine Grape Newsletter, Dec. 2004*)

General Information

Berry Crops in Cornell's Forest Farming Project

Lori Bushway, Cornell University

Most farms in the Northeast include wooded areas that exist either as woodlots, plantations, or fence rows. However, the degree to which these areas support a particular farm is highly variable - some being largely ignored, others contributing significantly to the farm's economic well being.

One possibility for farmers looking for alternatives to traditional farming and forestry practices is the greater integration of trees directly into the farming system through the adoption of various agroforestry principles and practices.

Forest farming is a specific agroforestry system that involves planting profitable, shade-tolerant species within an established forest to produce a variety of non-timber forest products such as food, medicinal herbs, ornamentals, or craft materials.

Characteristically, forest farms are relatively small in area but spatially complex. They take advantage of multiple layers within the vertical profile of the forest. In addition to shade, the upper canopy (overstory) of mature trees may provide nuts and fruits. The middle layer may include small trees and woody shrubs, like pawpaws, blueberries and brambles. The understory can support herbaceous perennials, like the medicinal herb ginseng.

Though forest farming offers many opportunities for supplemental income, adoption in the Northeast has been limited. New research efforts at Cornell's MacDaniels Nut Grove could help develop the principles and practices research base needed to advance the implementation of forest farming in the Northeast.

In 2002 researchers and students began renovating a long neglected woodlot located in the Cornell Plantations Upper Cascadilla Natural Area. The 5-acre site, originally planted in the 1930s is being developed as a forest farming and agroforestry research and education center. Initial research efforts include the establishment of three berry crop studies:



- Shade-tolerance of the five fruit species
 - Chokeberry (*Aronia melanocarpa*)
 - Blueberry (*Vaccinium* sp.)
 - Gooseberry (*Ribes grossulariae*)
 - Red currant (*Ribes sativum*)
 - Honeyberry (*Lonicera kamchatka*)

- Purple raspberry and black raspberry cultivation under black walnuts trees
- Elderberry production in forest understory

The MacDaniels Nut Grove is open to the public year round. Visit the website www.hort.cornell.edu/mng/index.html for more information about public guided tours and this forest farming and agroforestry research and education center.

For more information about forest farming see:

www.hort.cornell.edu/mng/index.html
www.cce.cornell.edu/scnyag/forestfarming/index.htm

(Source: *New York Berry News*, Vol. 3, No. 12, December 2004)

Agricultural Environmental Enhancement Program Water Quality Protection Funding Available to Farmers

Susan Phinney, Mass Dept. of Ag. Resources

The Massachusetts Department of Agricultural Resources' Agricultural Environmental Enhancement Program (AEEP) provides funding to farmers to install a variety of water quality protection practices. Eligible practices include the installation of buffers, animal waste systems, pesticide storage facilities, fencing, culverts, seed and gutters. All farmers who actively

farm five acres or more of land which could potentially impact a water resource are eligible.

FY 2005 RFR - Response/Application is now available at www.Mass.Gov/agr/programs/aecp/rfr/AEEP05RFR.pdf.

This year \$250,000 is available with a maximum of \$24,000 per farm. All projects must be completed by June 30, 2005. There are TWO (2) due dates for the response/application -

November 26, 2004 **and April 1, 2005**. \$200,000 will be awarded after the November 26th deadline and the remaining \$50,000 will be awarded after the April 1, 2005 deadline.

The program has expanded this year to include funding activities that improve air quality in addition to funding water quality and conservation measures on Massachusetts' farms. Eligible growers include all commercial agricultural operations in the Commonwealth including shellfish growers. Funding is made available for installing best agricultural practices. Examples of installations include: **pesticide storage shed, trickle irrigation**, flumes and manure storage areas.

Please be sure to read the Fact Sheet (www.Mass.Gov/agr/programs/aeep/rfr/05FACTSHEET.pdf) as well as the RFR.

FY 2004 RFR - has Closed - Follow these links for updates on how funds were spent. www.Mass.Gov/agr/programs/aeep/2004_aplications.htm, www.Mass.Gov/agr/programs/aeep/gallery/index.htm and www.Mass.Gov/agr/programs/aeep/sites.htm.

For more information contact:

Susan Phinney, Coordinator

Tel: (617) 626-1772

Email: Susan.Phinney@state.ma.us

(*Source: Massachusetts Department of Agricultural Resources Farm & Market Report, Vol. 81, No. 6, December 2004*)

“Does Your Town Need an Agricultural Commission?”

Mary Greendale, Mass. Dept. of Ag. Resources Consultant

That will be the topic of 3 informational meetings in:

December 8, 2004, Marion Social Club, Marion 5:30PM to 7:30PM. Co-Sponsored by the Westport, Dartmouth and Middleboro Agricultural Commissions, Pilgrim Resource Conservation & Development and a grant from the Coastal Zone Management Agency. For more info. contact Barbara Link 508-336-3823 or by email barbaralink@earthlink.net.

January 10th (snow date, the 18th) at the Brookfield Town Hall, 6:30-8:30pm

January 26th (snow date, January 31st) at the Holden Town Hall.

Meetings will introduce farmers, local officials and interested parties to the benefits and process of establishing local Agricultural Commissions. These meetings are being sponsored by the Massachusetts Department of Agricultural Resources.

“Worcester County ranks first in total value of agricultural products sold in Massachusetts, with a proud history behind it. But like everywhere in this state, development pressures are crowding farms and making them less and less viable. A local Agricultural Commission can give farmers a voice in town government, can educate the residents on the value of working farms, and can promote the products and services offered by agriculture,” according to Doug Gillespie, Commissioner of the Department.

Commission members and local officials from communities with Ag Commissions will talk about their experiences in passing a local by-law at Town Meeting and in getting themselves up and running. The Department is encouraging communities to consider putting an article on their Town Meeting warrants this spring.

For information about these meetings, contact Mary Greendale at 508-429-2813. (*Source: Massachusetts Department of Agricultural Resources Farm & Market Report, Vol. 81, No. 6, December 2004*)

Agricultural Commissions On The Web

Susan Phinney, Mass Detp. Of Ag. Resources

At present, there are 13 agricultural commissions in Massachusetts! To assist others who are interested in learning about and forming agricultural commission, DAR has developed a new web page devoted to this topic on DAR's website. The address is www.mass.gov/agr/agcom.

The site incorporates some material from an excellent CD produced by and available from Pilgrim RD&C, which provides recommendations for how to organize an agricultural commission in your town. A list of the current agricultural commissions, including contacts for people who are already involved in agricultural

commissions, can be found on the site. There is an additional listing of organizations throughout the state that can help answer questions about agricultural commissions. DAR intends to keep this site updated so please let us know what other information would be helpful to support agricultural commissions. Please contact Susan Phinney at 617-626-1772 or email her at susan.phinney@state.ma.us (*Source: Massachusetts Department of Agricultural Resources Farm & Market Report, Vol. 81, No. 6, December 2004*)

International Buyers to Meet with Suppliers in Boston

Bonita Oehlke, Mass. Dept. of Ag. Resources

Here is a low-cost, low-risk opportunity to get product feedback from international buyers and develop business relations and sales. There will be some 20 international buyers in Boston on Thursday, January 13, 2005. There will be 30-minute meetings to meet with each buyer that you have pre-selected prior to the mission. You may use the meetings to cultivate new export sales, solidify relationships with current buyers, or gain primary feedback about your products in specific international markets. The cost is \$125.

Buyers will be looking for a vast range of products from a variety of market segments including retail,

foodservice, ethnic and healthy/organic. The list of buyers is being finalized. You may obtain FREE pre-meeting assistance including information to develop export pricing and quotations. To review details about the event including buyer profiles and/or sign up for assistance, please contact bonita.oehlke@state.ma.us.

The Massachusetts Department of Agricultural Resources is working closely with Food Export USA Northeast to coordinate this event. www.foodexportusa.org. susan.phinney@state.ma.us (*Source: Massachusetts Department of Agricultural Resources Farm & Market Report, Vol. 81, No. 6, December 2004*)

New MDAR Business Planning Sessions

Rick Chandler, Mass Dept. of Ag. Resources

The cold months and tax time bring farmers' labors in from the field and onto the desk. Need help sorting those piles into meaningful information and making informed plans for the future? Ready to face a smaller pile next year? Sign up for a chance to gather with your peers for a few evenings in a friendly setting with professional guidance and develop some measurable plans for your farm enterprise!

MDAR can offer four learning formats in 2005.

1) For Experienced Farmers - The now-familiar and acclaimed 11 session (one per week) Nx Level course "Tilling the Soil of Opportunity" – successfully completed by over 230 MA ag businesses in the last six years – will return with our experienced Instructor and team of topic experts. Limited to twelve already-working farms, this course runs January-early April. A likely site this year is in the Quaboag Valley CDC service area – somewhere near Palmer. This allows for easy site access from the Pike and points north and south. Fee is \$300 per business. Signup is in December, with the course slated to begin in mid January.

2) For New Farmers - New - MDAR will partner with the New England Small Institute to offer their popular 4 session (one per week) "Explorer" course for those contemplating or just beginning a new farm enterprise. Also limited to 12 new/entry farmers, NESFI teaches this course in Belchertown at their home location. MDAR is making it available in other locations around the state where there is interest. We expect to offer a session this year in late winter in northern Berkshire County, in collaboration with Berkshire Grown. Fee is \$150 per business. Signup is ongoing – this course can be held in any month when there is need.

3) For Ag Businesses seeking a boost - New – MDAR is preparing to pilot a new year-long "Cluster" approach to farm business development. Limited to 10 well-

developed existing ag businesses, this format starts with a facilitated monthly group meeting, interspersed with separate bi-monthly meetings of each participating business's "advisory board". This board, which will be formed as part of the cluster program if you don't currently have one, includes all key decision makers in each farm business – and is also facilitated by the Cluster Coordinator. The group meetings will serve as an invaluable peer resource to focusing and solving common issues, and the individual meetings of the farm boards will deal with private implementation of plans and problem solving. The Coordinator for this effort has extensive experience using this model with small businesses in RI and MA, and is also our respected NxLevel Instructor for ag businesses from format # 1 above. We hope to pick a location based on interest and begin in March or April. Fee is \$500 per business.

4) For Farmers needing more from their Schedule F - New – For three years now, MDAR has been developing a financial and business planning tool known as "The Financial Bridge". It starts from your existing IRS Schedule F (the farm tax form) and works backwards and forwards to develop meaningful financial statements and analysis tools for your ag enterprise. You will attend 2-3 training sessions in the use of the tool, and will receive a workbook and software disk to make the forms interactive based on simple Microsoft Excel spreadsheets. The sheets work with each other automatically – a change on one line in one form makes the appropriate changes to all the other forms without separate entries. Although we will use a computer lab for the trainings, you must have access to a computer at home with a version of Excel installed no older than "2000" to use this tool. This is a much simpler and more intuitive tool than learning a full accounting program, and we give you the software (assuming you already have Excel). You will take home a tool you can easily continue to use, and which will always work with your schedule F each year. Visits to your

accountant and tax preparer will be shorter, more useful and cheaper! The pilot class is limited to 10. We have already tested it successfully with three individual farms who said we had a good thing and should get on with it. The fee for the pilot is \$75, and the first course will be held at UMass Dartmouth, probably in February.

The fee for each of these formats is already significantly subsidized by MDAR and its regional partners. Most of what you will pay will go for materials and the extra time our Instructors and Coordinators put in to each enterprise. We have found that farm businesses prepared to make at least this small investment in planning and analysis have shown the

commitment to get the most out of the time involved. We can discuss some accommodation if the cost is a serious barrier.

December and early January is when we must decide whether to hold these courses – and where. Please call or email us to make your interest known and to get questions answered. We will send you an application and additional information.

Contact: Rick Chandler, MDAR, 25 West Experiment Station, UMass, Amherst, MA 01003. (413) 577-0459, rchandler@umext.umass.edu (*Source: Massachusetts Department of Agricultural Resources Farm & Market Report, Vol. 81, No. 6, December 2004*)

'Local Hero' Campaign now Enrolling Members for 2005 Season

Mark Lattanzi, Community Involved in Sustaining Agriculture

Farmers, grocery retailers and restaurant owners in Franklin, Hampshire and Hampden Counties are invited to join Community Involved in Sustaining Agriculture's 'Be a Local Hero, Buy Locally Grown' agricultural marketing program. The Local Hero campaign offers farm businesses great visibility through radio and print advertising, the annual Farm Products Guide - distributed to 250,000 people in the Pioneer Valley, the

website www.buylocalfood.com and more. To learn more about how joining the Local Hero campaign can put a spotlight on your business and its locally grown products, contact Campaign Director Mark Lattanzi, 413-665-7100 or mark@buylocalfood.com. The enrollment period runs from now through March, 2005, with early bird discounts available for those who enroll by 12/31/04.

Upcoming Meetings

For those who are willing to travel outside the New England regions, a comprehensive listing of upcoming meetings around the country which might be of interest to berry growers can be found at the National Sustainable Agriculture Information Service (<http://attra.ncat.org/calendar/index.php/2005/01/>).

January 7, 2005 – New England Vegetable and Berry Growers' Meeting, Park Inn at the Parwick Centre, 450 Memorial Drive, Chicopee MA. (Next to Exit 5 off I-90). This is an all day meeting covering topics on vegetable topics as well as general pesticide selection and use-survey results. Four contact hours for pesticide license recertification will be awarded for attending this meeting. The registration cost is \$10 (free for members of the NEV&BGA). For more information and to make lunch reservations, contact John Howell at 413-259-1203 or howell@umext.umass.edu.

January 17-19, 2005. New York State Farmers' Direct Marketing Association Conference, Wyndham Hotel, Syracuse, New York. Sponsored by NYSFDMA, Farmers' Market Federation of New York, New York Small Scale Food Processors Association, and Cornell Cooperative Extension. **For information**, call the NYSFDMA office at (315) 475-1101.

January 18, 2005 Winter Flower Growers' Meeting sponsored by University of Massachusetts Extension and Massachusetts Flower Growers' Association. Time: 9:00 AM - 3:15 PM Place: D&D Farm and Greenhouses, 32 Hudson Rd., Stow, MA

Join us for a full-day educational program for greenhouse and flower growers and tour of D&D greenhouses. Topics will include "Creative Containers and Mixed Baskets", "Water Quality Issues for MA Growers", "Managing Your Advertising Dollars", "Sanitizing Greenhouses with Chlorine Dioxide" and "New Fungicides". The cost to register is \$15 and lunch is available for \$15.

D & D Farm and Greenhouses - What started as a way to make a few extra bucks for one man and his family, has grown into a three generation, family owned and operated wholesale flower business.

D & D Farms has over 140,000 sq. ft. of greenhouse growing area for pansies, perennials, annuals, mixed and flowering hanging baskets, 4" and 6" crops and flowering mums and asters. They just built a new Westbrook Skyline II gutter-connected, glass open roof designed greenhouse and plug operation/production facility. D&D sow

all their own seedlings, from pansies to perennials to the ever-growing selection of flowering annuals. Their vegetative material and mums come from cuttings they root themselves.

For more information contact Tina Smith by phone at 413-545-5306, by email at tsmith@umext.umass.edu or visit: http://www.umass.edu/umext/floriculture/upcoming_events.html.

January 20 & 21, 2005 – Long Island Ag Forum 2005. The 2005 Long Island Agricultural Forum will be held on January 20 & 21 at Suffolk County Community College in Riverhead, NY. Sessions will include: Vegetable, Potato, **Viticulture**, Agricultural Issues, Pesticide Issues, etc. Programs will be mailed in late November/early December. Contact Linda Holm at Suffolk County Cooperative Extension, 631-727-7850, lml10@cornell.edu.

January 26-29, 2005 Virginia Grown Conference. Annual meeting of the Virginia Vineyard Association in Richmond, VA. In cooperation with Virginia Tech Cooperative Extension. Always a great program focusing on practical viticulture with a small trade show. Visit their web site for more information at www.virginiavineyardsassociation.com/.

January 28-30, 2005. Organic Farming and Gardening Conference, Syracuse, New York. Call 607- 652-6632 or e-mail office@nofany.org.

February 1-3, 2005. Mid-Atlantic Fruit and Vegetable Convention, in Hershey, Pennsylvania. For more information e-mail: <mailto:shap@cvn.net>.

February 3 - 5, 2005, PASA Farming for the Future Conference, Penn State Conference Center and Hotel, State College, PA. Pennsylvania Association for Sustainable Agriculture's 14th annual conference. This years theme is Reclaiming Health: Nourishing Our Families and Farms. Keynote speakers are Allan Savory and Marian Nestle. To receive a full brochure, visit www.pasafarming.org or call 814-349-9856.

February 10-12. North American Farmers' Direct Marketing Association Conference Park Plaza Hotel in Boston. The theme of the 20th annual North American Farmers' Direct Marketing Convention is "Start a Revolution." The convention is one of the premiere farm direct marketing events in the world. Past attendees have come from as far as England, Ireland, Japan and Australia. In addition to the conference, the convention will feature pre- and post-conference bus tours and a full-day workshop. The entire event runs from Feb. 7-14, 2005. A trade show with more than 80 vendors will be held in conjunction with the conference; it will be held across the street at the historic Castle at Park Plaza. For convention information, visit www.nafdma.com. Or, e-mail info@nafdma.com. CALL (413) 529-0386. Registration will be available on-line around Nov. 1. The pre-registration deadline is Jan. 6.

February 14-17, 2005. Empire State Fruit and Vegetable Expo, On Center, Syracuse, New York. Call: 315-687-5734 or e-mail <mailto:nysvga@twcnny.rr.com>.

February 17-18, 2005, Ontario Fruit and Vegetable Conference/Ontario Berry Growers, at Brock University in St. Catharines, Ontario. Information and registration at <http://fruitveggie.hortport.com/Dispstpg.htm?ID=3042>.

February 16 – 19 2005 North American Berry Conference in Nashville, Tennessee. The 2005 North American Berry Conference will feature the most extensive program in its history and the run down of speakers reads like a list of “who’s who” in the berry world.

Combining the power of the North American Strawberry Growers Association and the North American Bramble Growers Association we've created a “premier” event for berry growers . . . four tracks with focused interest topics, general sessions that bring the interests of the berry world together, an extensive exhibit area, and a production and marketing tour to top it off. If you can only go to one event each year, this is the year to put the North American Berry Conference on your calendar.

If you have questions contact us at info@nasga.org. Conference Details and Exhibitor Information At www.nasga.org/ or www.hort.cornell.edu/grower/nabga/

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.

Massachusetts Berry Notes – Subscriber’s Survey 2004

We’d like to know how we can make Berry Notes better.

1. How many acres of berries to you grow? _____ Strawberries _____ Blueberries _____
 _____ Brambles _____ Grapes _____ Other _____

2. Of the crops covered in Massachusetts Berry Notes, how would your rate the information provided the newsletter?

Crop	Not useful	Somewhat useful	Very useful
Strawberries			
Blueberries			
Brambles			
Grapes			
Currants/Gooseberries			
Other: _____ ?			

Comments:

3. What other crops would you like to hear about in the newsletter?

4. Of the topics covered in Massachusetts Berry Notes, how would your rate the information in the newsletter?

Topic	Not useful	Somewhat useful	Very useful
General Horticulture			
Pruning			
Fertilization			
Insect, Disease, Weed Identification			
Pesticide Use			
Organic Management			
New Crops			
Other: _____ ?			

Comments:

5. Information obtained from Massachusetts Berry Notes helped me to improve:

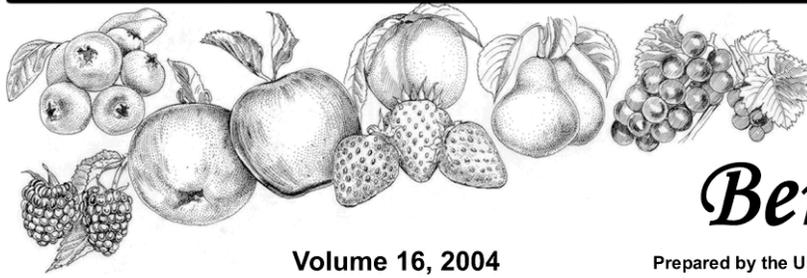
Topic	Rating		
	Yes	No	Not sure
Farm Profitability	Yes	No	Not sure
Nutrient Management	Yes	No	Not sure
Insect, Disease or Weed Management	Yes	No	Not sure
Marketing	Yes	No	Not sure
Environmental Quality and Safety	Yes	No	Not sure
Other: _____?			

Comments:

Please fold and staple (or insert in an envelope), stamp and mail
THANK YOU!

Place
stamp
here

Sonia Schloemann
UMass Extension Fruit Program
25 West Experiment Station/UMass
Amherst, MA 01003



Berry Notes

Volume 16, 2004

Prepared by the University of Massachusetts Fruit Team

Subscription Renewal -- 2005

Massachusetts Berry Notes is a comprehensive newsletter published by the UMass Extension Fruit Team to provide high quality information on commercial berry production to subscribers. The information contained in Berry Notes is geared for growers in New England and other Northern climates. The articles contained in Berry Notes are original articles written by UMass Extension specialists or reprinted from other sources, with citations. Topics on cultural practices, variety evaluations, pest management, pesticide updates, organic methods, new crops and more, are covered. Announcements for meetings and other timely topics are also included. Distribution is via email, providing a link for viewing or downloading a pdf file. This requires the recipients to have an updated version of Adobe Acrobat Reader, which can be downloaded for free from the UMass Extension Fruit Team website (www.umass.edu/fruitadvisor). Current issues of Berry Notes are only available to subscribers. Archived issues (one month after release) are available for free on the 'fruitadvisor' website.

This year we are also offering a fax distribution option for Berry Notes. Fax subscribers will receive a faxed copy of Berry Notes the same day it is issued via email. Individual issues are generally 15 – 20 pages long. Growers can choose to receive either electronic or fax delivery for \$10, or both for \$20. Faxed delivery must be to a full time fax number, not on a 'call ahead' basis.

<i>Berry Notes</i>	Electronic copy --	\$10	_____
	Fax Copy	\$10	_____
	Total Enclosed:		_____

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Please make your check out in U.S. currency to UNIVERSITY OF MASSACHUSETTS and send it and this form to the following address:

**Doreen York
UMass Fruit Program
204 Bowditch Hall/UMass
Amherst, MA 01003-9294**