



# Berry Notes

Prepared by the University of Massachusetts Fruit Team

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## Volume 15-- 2003

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### Crop Conditions:

**Strawberries:** Harvest is underway. Reports are of good size and quality. We need some sunny, dry weather to really bring the crop on. Slug populations are likely to be high this season, especially in heavily mulched fields. Remember to keep up with blossom removal on new plantings. Some growers have reported damage in new plantings from cyclamen mite. See more on this below. **Blueberry** fruit-set is good and reports of mummyberry and other early season diseases appear to be low, despite the wet weather conditions. Cranberry Fruitworm moths are still relatively low in numbers. Check for infestations by looking for individual fruit that turn prematurely blue accompanied by webbing and frass. In small plantings, these infestations can be cut out and removed from the field to control damage. Blueberry maggot traps should be put in place this week. Keep a look-out for aphids. Look for and prune out phomopsis or fusicoccum infections. **Raspberries** are in bloom. Botrytis fruit rot management is the primary issue now. Watch for tarnished plant bug, clipper and mites (two-spotted spider mites and European red mites). No insecticide applications should be made during bloom. Watch for potato leafhopper on **fall-bearing raspberries**. **Grapes** are progressing toward bloom. There is a wide range in development from coastal to inland vineyards. Inland vineyards are further along. Cluster thinning should be done before bloom. See last week's Berry Notes for information on this topic.

### Environmental Data:

#### STATE WEATHER SUMMARY For the Week Ending Sunday, June 15, 2003

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

STATE	AIR TEMPERATURES				PRECIPITATION	
	LO	HI	AVG	DFN	LO	HI
ME	33	81	58	-4	0.00	1.81
NH	32	82	60	-2	0.65	3.40
VT	41	81	62	-1	0.43	2.51
MA	50	81	63	-2	0.34	2.13
RI	53	80	63	-2	0.03	1.15
CT	52	84	65	-1	0.50	2.21

(Source: New England Ag. Statistics Service, Weekly Crop Weather Report, Volume 23, Number 8, June 16, 2003)

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## Strawberries

### Pre-Harvest Checklist for Pick-Your-Own

David Handley, Univ. of Maine

It's that time again! As harvest approaches, make sure that your customers are going to have an enjoyable experience. Review the checklist below to evaluate your customer readiness.

- 1) Signs to the farm are neat and easy to read
- 2) Easy access to the fields and plenty of parking
- 3) Someone is ready to greet customers and offer parking instructions and directions to the field
- 4) Access to the field is free of hazards
- 5) Transportation is provided for the elderly and disabled
- 6) The rules regarding picking are clearly posted
- 7) Someone is in the field to show customers where to pick and to answer questions
- 8) There are plenty of picking containers available
- 9) Clean restroom facilities are available
- 10) Handwashing station is available
- 11) Someone is available to help customers carry fruit out of the field
- 12) The checkouts are fast and efficient
- 13) Beverages are available
- 14) Shade and seats are available for customers wanting to rest
- 15) The help are friendly and knowledgeable

Your clean, neat and friendly atmosphere will leave a lasting impression on your customers, encouraging them to come back and to recommend your farm to their friends. (Reprinted from *Massachusetts Berry Notes*, Vol. 13, No. 10, June 14, 2001)

### Evaluation of Acaricides for the Economic Control of Cyclamen Mite in Strawberries: 2002

L. K. Tanigoshi and J. R. Bergen, Washington State University

Two acaricides were evaluated for cyclamen mite efficacy as a renovation treatment on 'Totem' strawberries at the Vancouver REU (Fig. 1). The traditional recommendation for cyclamen mite control in PNW strawberries is at the dormant and prebloom periods. The spring application(s) for cyclamen mite control is confronted with the physical problem of dense canopy growth that will reduce effective penetration of a miticide into the



crowns where the adult females overwinter (Fig. 2). Past research indicate the optimum period to apply a contact miticide for cyclamen mite is when the population has migrated into the fall maturing crown inflorescences. The ideal timing is soon after field renovation after harvest in July and early August. Treatments were applied on 26 August to preselected 3 year-old 'Totem' plants with a Solo® backpack pressure sprayer at 40 psi with a 5500 adjustable conejet nozzle. The trial consisted of two rates of Acaramite® (biphenazate), Thiodan (endosulfan) and

untreated check. The treatments were replicated six times with 2-3 crowns per treatment removed and placed in a Berlese-Tullgren funneled for controlled heat extraction into 70% ethanol.



Compared with the untreated check, Acaramite 50WS and Thiodan 50WP were significantly different at 3 and 8 days posttreatment (Table 1). Contact knockdown of Acaramite generally occurs within 3-4 days for cyclamen mite. This, compared with the 1-2 day knockdown by the organic-chlorine compound Thiodan. Residual persistence for both acaricides is longer than 14 days, about the average length of the cyclamen mite's life cycle. EPA fast tracked Acaramite last year as a reduced risk miticide and an OP alternative. Acaramite was registered on strawberries for spider mite control at 0.75-1.0 lbs (AI)/acre in early 2002. We are working with Crompton Uniroyal Chemical for the addition of cyclamen mite control on their federal label.

**Table 1.**

Treatment	lb(AI)/ac	Precount	3DAT	8DAT	11DAT	14DAT
Check		63.5a	71.7a	72.0a	113.0a	131.7a
Thiodan 50WP	2.0	55.2a	11.3b	8.3b	11.7c	43.3b
Acramite 50WS	0.5	56.2a	32.2ab	39.7ab	67.3ab	53.1b
Acramite 50WS	1.0	50.5a	11.0b	20.3b	42.3bc	32.8b

DAT=days after treatment

Means within columns followed by the same letter are not significantly different (Tukey test,  $P < 0.05$ ).

(Source: Washington State University Research Reports,

<http://vancouverreu.wsu.edu/research/entomology/Cyclamenmites.htm>)

## Brambles

### Botrytis in Brambles

*Jim Travis, Jo Rytter, and Ken Hickey, Pennsylvania State University*

Gray mold or Botrytis fruit rot is the most common and most serious disease of Rubus species worldwide and is usually found on overripe and bruised fruit. The pathogen has a wide host range and overwinters in dead leaves and plant debris. The fungus rots fruit in the field before harvest, especially if rain occurs during blossoming. Most overripe and bruised fruit are susceptible, especially red raspberries. Aging leaves are also attacked giving rise to cane infections.

#### Symptoms

Infections in the spring can be observed on canes, appearing as bleached-out, whitish areas. Infected berries become covered with masses of fungal spores which gives the disease its characteristic name "gray mold." If not harvested, infected berries become mummified and remain attached



to the plant which can serve as additional sources of inoculum in the planting.

#### Disease Cycle

The disease cycle of Botrytis on brambles is the same as that on strawberry. See "gray mold of strawberry fact sheet."

#### Control

Cultural practices that create an open plant canopy, improve air circulation, increase light penetration, and speed the drying of plant surfaces after rain, aid in the control of the disease. It is important to avoid an excess of nitrogen fertilizer and the elimination of weeds help maintain an environment less susceptible to gray mold. It is also important to harvest fruit before it is overripe. (Source: PennState Bramble Fact Sheet Series, <http://fpath.cas.psu.edu/factsite.html>)

## Blueberries

### Management of Blueberry Maggot

*Sridhar Polavarapu, Rutgers University*

As of June 11, adult blueberry maggots have not been captured on ammonium acetate baited yellow sticky boards. We expect adults to begin emerging in the following 3-5 days. In 2002, the first adult was captured on June 4.

The following aspects of the lifecycle of blueberry maggot should be kept in mind in devising a management program to combat this pest:

1) Females require approximately 10 days (under June field conditions) to mature and begin egg laying. This

means there is at least a 10-day interval between first female emergence and first egg laying. This is the rationale for recommending the first insecticide spray specifically targeting blueberry maggot approximately 7-10 days after the first adult capture.

2) Blueberry maggot infestations thrive on abandoned and wild blueberries. Adult blueberry maggots are known to move considerable distances (several hundred ft) over their adult lifespan and infest nearby commercial blueberry blocks. The risk of blueberry

maggot infestation is therefore higher for blocks closer to wild and abandoned blueberries. Perimeter sprays can save considerable time and money avoiding unnecessary sprays to the interior blocks.

- 3) The adult female lays a single egg inside a ripening blueberry (Each female can lay upto several hundred eggs). Once an egg is laid inside a berry, insecticides will not reach the egg or larval stage developing inside the berry. The only vulnerable stage to insecticide treatments is the adult stage that is actively foraging for food (protein), mates, and egg laying sites (berries). Therefore this insect can not be controlled once eggs are already laid in the berries.
- 4) Majority of the adults emerge over a 4-5 week period. Adults can live as long as 30 days. Considering that each insecticide may only provide control over a 7-10 day period, several insecticide applications are needed to cover the entire duration of the egg laying period.

- 5) Mature blueberry maggot larvae drop to the ground in late July and August and pupate in the top 2-3 inches of the soil surface. These pupae are very vulnerable to high soil temperatures in July and August and desiccation. Keeping blueberry fields weed-free will enhance pupal exposure to high soil temperatures and further reduce adult populations in the next season.

Growers who intend to export fresh blueberries to Canada are required to participate in the Blueberry Maggot Certification Program administered by the NJ Department of Agriculture. Growers have the option of deciding to participate in the calendar-based spray program or the IPM approach. More details on the two management options will follow in the next issue of the Blueberry Bulletin. (*Source: Blueberry Bulletin Vol. XIX, No. 9, June 12, 2003*)

## **Disease and Culture: Phomopsis and Fusicoccum Canker**

*Gary C. Pavlis, Rutgers University*

**Phomopsis** has been seen in some areas. All varieties show symptoms but Weymouth, Bluecrop, Blueray and Berkeley seem to be the most affected. Unfortunately dieback of twigs and canes may become more severe as warm weather occurs and as strain of producing a crop further weakens the wood. Most of the weak canes, which have leaf growth which is late and reduced, should recover but will not produce well. Twig blight symptoms usually consist of a tip dieback of about 2 to 6 inches on current-year wood. Small black pycnidia may also be produced upon the blighted twigs. As with other canker disease, the most conspicuous symptom is the "flagging," or wilting and death of individual stems during the summer. Under severe disease conditions, several individual canes may be affected on a single bush. When Phomopsis canker is responsible for this symptom, the actual infection site is much less noticeable than when fusicoccum canker is involved, and appears primarily as an elongated flattened area, usually near the base of the cane. Small black dots that are the spore-containing bodies (pycnidia) of the Phomopsis fungus can sometimes be seen within this flattened area. Pruning the weakest canes to the ground may not seem practical from the standpoint of labor and costs but it is the best practice for the long-term production of the bush. Winter injury, compounded by Phomopsis, often may cause poor production for two successive years if some radical pruning is not done early during the first growing season of the injury. Fungicide sprays are a help early but do little good at this time.

**Fusicoccum** canker is a serious disease of highbush blueberries in the more northern, colder regions of Michigan and New York. In Michigan, fusicoccum canker is the most important cane disease of blueberries in the northern half of the state, whereas another canker disease (Phomopsis canker) is much more important south of this region. The most conspicuous symptom is the "flagging" or wilting and death of individual stems during the summer, although such flagging may have several causes. The most diagnostic symptom of fusicoccum canker is the formation of dark red or brownish-purple infected area (lesions), 1 to 6 inches long, near the base of young canes. These lesions usually center around a bud, and may alternate in color to give a bull's-eye pattern. They may also contain a mass of tiny black dots (pycnidia), which are the spore-containing structures of the fusicoccum fungus. Prune out and destroy cankered stems to reduce the source of infective spores. Prune bushes and control weeds to improve air circulation and reduce drying time after a rain. Some broad-spectrum fungicides may provide additional control if used on a regular basis. Because fusicoccum canker activity appears to be greatest during the prebloom and bloom period, it may be desirable to concentrate a fungicide program during this time if the disease has been a problem and it is undesirable or impractical to maintain protection season long. Some fungicides active against mummy berry are not active against fusicoccum canker and vice versa. (*Source: Blueberry Bulletin Vol. XIX, No. 9, June 12, 2003*)

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## Grapes

### Downy Mildew

*Alice Wise, Cornell University*

Downy mildew has appeared in some vineyards at low levels. Downy mildew thrives in humid, wet weather. With the temperatures up slightly this past week, conditions were perfect for downy development. On the bright side, vineyard managers have been vigilant this season and while downy may pop through, it should for the most part be controllable.

With the conditions so conducive to disease this spring, broad-spectrum protectants like mancozeb and captan have proved their value. These materials are very good protectants for downy mildew. Ziram and carbamate (ferbam) are protectants but are not as effective. Abound is rated as very good against downy but past experience dictates that Abound alone does not provide complete control under heavy disease pressure. Sovran and Flint provide slight control, insufficient in this weather. Protectants such as mancozeb, captan and so on are decent but do not provide guarantees for complete control. Vigilance is still necessary as is follow up treatments if downy breaks through. Due to impending bloom and highly conducive conditions, follow up is absolutely necessary at this point in the season.

Copper, the old standby, is a protectant with some post infection ability. >From personal experience, it has a hard time with raging infections as would most materials. Exercise caution with copper right now for several reasons. First, it is most phytotoxic under cool, slow drying conditions. Phytotoxicity is a nasty thing, it has happened to many of us. Do not be lured into a false sense of security if you've never had this enlightening experience. Follow label directions for use of spray lime as a safener. Read the label and the NY/PA Pest Mgt Rec's for grapes for cautions on incompatible spray combinations.

Ridomil is a very effective downy material. It is not recommended for use on existing infections due to the danger of resistance. However, if you haven't abused the privilege in the past and if there are low levels of infection, applying Ridomil will provide both curative control and forward protection. Again, do not use this material on a DM epidemic, you are doing a disservice to yourself and to the industry. Ridomil may be pricey but now is the time to use effective materials.

The last option would be one of the phosphorus acid products – Aliette, Prophyt or Phostrol – all of which have post-infection activity but do not provide any forward protection. From Wayne Wilcox: 'There's apparently been some confusion about the two different forms of phosphorous that are used in viticulture and their relative merits as fertilizers and fungicides. Phosphorous acid (phosphonate and phosphite are synonyms) is the material that I discussed at length in the recent magnum opus [his annual write up on disease control]. This is what Aliette breaks down into. It is very active against downy mildew but not against any other grape disease. It has NO nutritional value (plants can't utilize this form of P) even though it is the prominent component in several foliar feed products. Phosphate (also called phosphoric acid; that's -ic, not -ous) is the form of P that is included in all traditional forms of P fertilizers. It's the only form of P that the plant can use. It does NOT control downy mildew.' A question recently came up about compatibility of phosphorous acid fungicides with other materials. Wilcox is not aware of any issues in that regard. (*Source: LI Fruit & Vegetable Update, No. 13, June 13, 2003*)

### Thinking Ahead

*Mark Chien, Wine Grape Agent, Penn State*

As a grower, I learned the value of thinking ahead in almost every aspect of grape growing and the business of farming. One of the most important things that a good wine grower should do is to anticipate the season - to review what has been, observe what is, and predict what may come. Spring never really happened in SE PA this year. Instead we have gone from cold and wet directly to warm, humid and wet. You have heard, ad nauseam, from all the pathologists, about the dangers of disease and the potential for crop loss this year, so you should be right on top of your spray program. I have heard from growers that bloom is about two weeks late in vineyards in SE PA and unless we get some nice weather during the summer, we might be looking at a late harvest. What that means is that late reds, especially the Bordeaux varieties, could run up against the usual late season problems

such as rain, frost, birds etc. Now is the time to begin preparing for that possible scenario. If I was a grower right now, I would be formulating a viticulture program for the season that will do everything possible to encourage fruit ripening. That, after all, is the name of the game, right? High vigor vines need extra attention. Canopy and crop management practices need to be tightened up and executed in a timely and proficient manner. I would consider regulating crop to a minimum level to achieve optimal ripeness and remain profitable. You should discuss with your wine makers you assessment of the vintage situation and see what he/she might want to do in the vineyard. This is a good time to work as a team because if the grapes come in with any problems, the wine maker will be aware of issues and be better prepared to deal with them. Good canopy management means doing shoot positioning and thinning, leaf pulling, hedging, and

suckering. Do anything that will promote proper canopy density and reduce fruit shading. An open canopy will allow for great sunlight, air and spray penetration to the interior, thus reducing disease and promoting fruit maturity. You can manage your crop right now by thinning to one cluster per shoot. I'm not making a wholesale recommendation, but look at your past yields and harvest data and make well educated guesses on how much fruit you can hang. Look towards lag phase (50 days after bloom at seed hardening) to take a serious crop estimate. You can do your thinning immediately afterwards and have plenty of time to gain some ground in ripening.

Unfortunately, my experience is that years like this one are often the most expensive to farm and the may yield the most mediocre fruit. The issue here is to do everything you can

viticulturally to offset the curve balls that Mother Nature is tossing at us. You'll spend more on just about every aspect of growing grapes, but consider the consequences if you don't ratchet up your program. Bring the best possible grapes you can to the winery and then let them work their magic. In the best years, wine is made in the vineyard, in the worst, they are made in the cellar. Good wine makers earn and deserve their lofty reputations in bad vintages.

If we are lucky, the weather will turn, we'll get a perfect season, like last year only with a little more moisture, and everything will come in squeaky clean and perfectly mature. But right now the signals are pointing in another direction. Let's be ready for either situation (*Source: PA Grape Info, Mon, 16 Jun 2003*)

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## General Information

### The Power of a PTO

*Adapted from John Shutske, University of Minnesota Extension Service*

Do you know someone who has been hurt by a power takeoff? Just about every farmer does. Like many farm machines, a power takeoff, or "PTO," can be a useful tool—or a lethal one. Used in the right way, a PTO can safely power your augers, mowers, choppers, and other implements. Used in the wrong way, a PTO can rip off your arm, crush your skull, or sever your spine.

A PTO can spin around 1,000 times per minute. That's 16 times per second! Toss a six-foot rope over a spinning PTO. It'll wrap around the shaft in less than a second. Now, imagine that rope is your shoelace—or your sleeve. How fast could you pull free? You'd need nearly a full second just to realize you'd been caught.

Electrical wires are insulated. Manure pits are covered. It's just common sense to cover up something that's a farm hazard. In most states, it is the law that any new or used tractor sold by a dealer must have a PTO master shield. The master shield covers the front U-joint and connector, a frequent site of entanglement. On newer PTO's, a driveline shield covers and spins independently of the driveline shaft. PTO shields that attach directly to the implement are also available. Most of them cost less than \$200 (and even the most expensive shield costs less than a day in the hospital). Sometimes shields are offered free; check with your equipment dealer.

#### Check Your PTO Safety

Whatever kind of shield your power takeoff has, it will only protect you if it's installed—and left on. The first step to PTO safety is to buy a shield and to keep it on. How many of these other steps have you taken?

#### **I almost always shut off the PTO before getting off the tractor.**

If using non-stationary or field equipment, shut off the PT and the tractor before getting off. Remove the key. If you're using stationary equipment, keep a safe distance from the PTO. Don't reach over the back of the tractor to adjust the PTO or throttle.

#### **I never step over a revolving shaft, even if it's shielded.**

Even a shielded shaft can catch hold of a shoelace or a flapping pants cuff.

#### **I wear tight-fitting clothes when operating farm machinery.**

Tuck in your shirt, and button your sleeves. Replace your work gloves if they're frayed.

#### **I've read the safety section of my machine's operator manual.**

So has anyone else who uses the machine. The manual tells you how to operate your particular piece of machinery. You paid a lot for it; take the time to use it right

#### **Any kids on my farm have been taught to stay away from tractors and machinery.**

Never let a child operate a PTO. We don't let children operate heavy factory machines. Why do we think they're safe around farm machinery? (*Submitted by Craig Hollingsworth, UMass Extension*)

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## Meetings

### UPCOMING FARM MEETINGS AROUND NEW ENGLAND

*From: Vermont Vegetable and Berry News, June 15, 2003*

(More info on these and other 2003 field days and farm twilight meetings are posted on the web at [www.uvm.edu/vtvegandberry](http://www.uvm.edu/vtvegandberry) click on 'meetings')

- June 17      Production of organic flowers, vegetables, and berries at Rosaly's Garden, Peterborough NH. See web site above or call UNH Extension 603-673-2510.
- June 24      Showcase of small fruit varieties (strawberry, raspberry, gooseberry, currant) at Nourse Farms (<http://www.noursefarms.com>) in Whately, MA. Call 413-545-4347 for directions.
- June 26      Integrating vegetables, animals and renewable energy at Caretaker Farm, Williamstown MA. Call 413-458-4309.
- June 30      Connecting local organic farms to institutions and wholesale markets. Upper Forty Farm, Cromwell, CT. Call 203-974-8473.
- July 10      Season extension and greenhouse tomatoes at Clearbrook Farm, Shaftsbury VT. Call Regional Farm and Food Project 518-271-0744.
- July 22      ABCs of growing organic garlic. Last Resort Farm, Monkton VT. Call NOFA-VT at 802-434-4122.
- July 30      Vegetable and berry twilight meeting at Roots and fruits, Dalton NH in Coos County. Call UNH Extension 603-673-2510 for info.
- Aug. 31      Growing super-hardy grapes in Vermont. Granstrom Farm, New Haven VT call NOFA-VT at 802- 434-4122.
- Sept. 6      Diversified mushroom production techniques. Intervale Foundation, Burlington VT. Call NOFA-VT 802-434-4122
- Sept. 18      Cut flower production, management and marketing. Lilac Ridge Farm, West Brattleboro VT. Call NOFA-VT 802-434-4122

### **North American Strawberry Growers Association (NASGA) Summer Tour August 20-22, 2003**

Read all the newsletters you want, but the best way to learn about berry production is to visit growers who are in the business. This opportunity doesn't come around every day, but it comes quite close to us this summer. The North American Strawberry Growers Association has a 2-day summer tour planned that will take you to some very interesting farms in New Jersey and southern Pennsylvania. You'll see blueberries, strawberries, raspberries, high tunnels, plasticulture and get some great marketing ideas. For more information, contact Pat Heuser, Phone: 814-238-3364 , FAX: 814-238-7051, e-mail: [info@nasga.org](mailto:info@nasga.org) . Details are also posted on the new NASGA website, <http://www.nasga.org/>

### **Southeast Strawberry Expo**

*November 8-11, 2003*

The 2003 Southeast Strawberry Expo will be held on November 8-11, 2003 at the Sheraton Imperial Hotel in Research Triangle Park, North Carolina. The Expo is the leading forum in the Southeast for information on plasticulture strawberry production methods and discussion of strawberry marketing practices and other concerns of strawberry growers. The conference attracts hundreds of participants — growers, extension workers, researchers, and suppliers—from many states.

The Expo will open on Saturday, November 8 with a farm tour to Whitaker Farms & Greenhouses in Climax, NC and Kildee Farm, in Ramseur, NC. Both farms, in the Piedmont area of North Carolina, have successful marketing programs and diversified operations that combine strawberries with other crops.

On Sunday, November 9, special intensive workshops are scheduled, including Strawberry Plasticulture for New Growers, highly recommended for anyone contemplating or starting a plasticulture strawberry operation. The Expo trade show will open that evening with a social hour in the exhibit hall and a grower sharing session.

November 10 and 11 will feature a full schedule of speakers and educational sessions. Production sessions planned include Growing Plugs, Using Fresh-Dug Plants, Identifying and Managing Pests and Diseases, Update on New Varieties, and Extending Your Season. Other sessions include Displays That Sell, Know Your Customers, Liability Insurance, and Adding New Products. Exhibitors include suppliers of plants, irrigation equipment, pest control products, packaging, farm market products, and more. A banquet is planned for the evening of November 10.

The Expo is sponsored by the North Carolina Strawberry Association in association with the North Carolina Department of Agriculture and Consumer Services, the North Carolina Cooperative Extension Service, and the North Carolina Farm Bureau.

For a complete schedule and registration brochure or information on exhibiting at the Expo trade show, contact the NC Strawberry Association, 1138 Rock Rest Rd., Pittsboro, NC 27312, phone 919-542-3687, fax 919-542-4037, e-mail: [ncstrawberry@mindspring.com](mailto:ncstrawberry@mindspring.com). Information will also be posted on the association's website, [www.ncstrawberry.com](http://www.ncstrawberry.com).

Reservations at the Sheraton Imperial may be made by calling 919-941-5050. Please mention the "**Strawberry Expo**" to receive the special conference rate.

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*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.*