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Berry Notes

Prepared by the University of Massachusetts Fruit Team

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MESSAGE FROM THE EDITOR:

New England Small Fruit Pest Management Guide available: the 2010-2011 edition of the New England Small Fruit Pest Management Guide is available for \$16 (\$12 plus \$4 s&h) and can be ordered through the UMass Fruit Team Website at <http://www.umass.edu/fruitadvisor/fruitsubscriptions.htm> or by contacting your state's Cooperative Extension Specialist.

Specialty Crop Information of Interest: the [University of Wisconsin-Madison Center for Integrated Agricultural Systems](http://www.wisconsin.edu/madison-center-for-integrated-agricultural-systems) has some interesting information for fruit growers. For example, see "[Uncommon Fruits with Sustainability Potential](#)".

Winter Moth Update: Winter moth larvae have been observed in RI in Red Maple buds. This means insecticide applications in blueberries and apples should be made this week. See last month's Berry Notes for more detailed information on this, but the general recommendation is for a dormant oil (2-2.5%) mixed with one of several insecticide options can be made until bud swell. Insecticide options include Confirm, Delegate, Assail 70WP, Asana XL or Esteem 35WP. Others may also be effective. Winter Moth is a pest of fruit crops in RI, eastern MA and CT. It may also be present in southeastern NH. Do not spray for this pest if you have not seen it in your area before. If you're not sure, scout your blueberries or surrounding red or Norway maples to determine if it is present. See <http://www.massnr.org/pests/pestFAQsheets/winter%20moth.html> for more information on how to identify this insect pest.

ENVIRONMENTAL DATA

The following growing-degree-day (GDD) and precipitation data was collected for an approximately one-week period, March 31 through April 6, 2011. Soil temperature and phenological indicators were observed on or about April 6, 2011. Total accumulated GDDs represent the heating units above a 50° F baseline temperature collected via our instruments for the 2011 calendar year. This information is intended for use as a guide for monitoring the developmental stages of pests in your location and planning management strategies accordingly.

Region/Location	2011 Growing Degree Days		Soil Temp (°F at 4" depth)	Precipitation (1-week gain)
	1-week gain	Total accumulation for 2011		
Cape Cod	5	14	42°	1.80" rain
Southeast	n/a	n/a	n/a	n/a
East	7	14.5	43°	1.25 (3" snow)
Metro West	0	4	38°	1.25 (4" snow)
Central	0	4	40°	1.44 (3" snow)
Pioneer Valley	0	6	38°	0.76
Berkshires	0	8	48°	1.44 (3" snow)
Average	2	8	42°	1.32

(Source: UMass Extension Landscape Message #6 April 8, 2011)

STRAWBERRY

Spring Strawberry Chores

Sonia Schloemann, UMass Extension

Established plantings:

1. **Straw mulch removal** – Remove straw mulch from strawberry rows in late-March to early April. Keep straw between the rows to help suppress weeds and reduce splashing from rain or irrigation. For fields where delaying bloom to avoid frost is desired, delaying mulch removal can be a useful technique. Check plants frequently and be sure to remove mulch before any plant growth begins. Delayed mulch removal can delay bloom by up to a week.

2. **Floating row covers** – Set out floating row covers as soon as straw mulch is removed on fields where early bloom is desired. Remember to remove row covers as soon as plants beneath them are blooming to insure good pollination of the flowers. Failure to remove row covers can result in poor pollination and misshapen unmarketable fruit. Covers can be pulled back over for frost protection if needed, although irrigation will protect to a lower temperature. See more below.

3. **Spring weed control** – Calibrate weed sprayer before season starts. Apply pre-emergent herbicides to dormant strawberries. See the 2010-11 New England Small Fruit Pest Management Guide (www.umass.edu/fruitadvisor) for detailed recommendations.

4. **Frost Protection** – be sure that overhead irrigation for frost protection is in place and running properly before it is needed. Pump failures and blown irrigation lines are no fun at 2:00 in the morning. The next issue of Berry Notes will carry detailed information about frost protection.

5. **Insect and disease management** – Calibrate sprayer before season starts. See article in this issue for more information. Order scouting supplies (traps, pheromones, etc.) and anticipated spray materials and store properly.

New plantings:

1. **Site preparation** – Prepare field properly well in advance of planting. This means doing site work (e.g., drainage, running irrigation mains, picking stones, etc.), and making soil adjustments (e.g., soil pH, organic matter, etc.).

2. **Preplant weed management** – Some pre-plant herbicides must be applied 30 days prior to planting. Keep this in mind. Some herbicides can be applied shortly before or after planting. See the 2010-11 New England Small Fruit Pest Management Guide (www.umass.edu/fruitadvisor) for detailed recommendations.

Planting–

- Check condition of plants on arrival and contact nursery if you have concerns.

- b. Keep dormant plants moist (but not wet) and cold (32 F) until planting.
- c. Lay out planting scheme before taking plants out of cold storage or have field ready before delivery if no cold storage is available.
- d. Make sure transplanter is in good running order before planting day.
- e. Soak roots in water for up to an hour before planting. Do not allow plants to sit in water much longer

- before planting but make sure they are moist until planted.
- f. Set plants so the middle of the crown is at the soil surface (not too deep or too shallow). This may take some fine-tuning of the planter.
- g. Irrigate immediately after planting to settle soil around the plants.
- h. Recheck planting depth after irrigation and make adjustments as needed.

RASPBERRY

Spring Bramble Chores

Sonia Schloemann, UMass Extension

Established Plantings:

1. **Pruning and trellising** - Finish pruning before budbreak by removing spent floricanes and thinning remaining canes to 6-8" apart. Keep row width to no more than 18" at the base. These practices allow for good air circulation and light penetration within the canopy and benefit fruit quality.
2. **Spring weed control** – Calibrate herbicide sprayer before season starts. Apply pre-emergent herbicides according to recommendations in the 2010-11 New England Small Fruit Pest Management Guide (www.umass.edu/fruitadvisor). Hand-weed trouble spots with perennial weeds if needed.
3. **Insect and disease management** – Calibrate sprayer before season starts. See article in this issue for more information. Order scouting supplies (traps, pheromones, etc.) and anticipated spray materials and store properly. A dormant lime-sulfur application can help control cane and spur blights but must be applied before green tissue appears.

New Plantings

1. **Site preparation** – Prepare field properly well in advance of planting. This means doing site work (e.g., drainage, running irrigation mains, picking stones, etc.), and making soil adjustments (e.g., soil pH, organic matter, etc.).
2. **Preplant weed management** – Some pre-plant herbicides must be applied 30 days prior to planting. Keep this in mind. Some herbicides can be applied shortly before or after planting. See the 2010-11 New England

Small Fruit Pest Management Guide for detailed information.

Planting –

- a. Check condition of plants on arrival and contact nursery if you have concerns.
- b. Keep dormant plants moist (but not wet) and cold (32 F) until planting. Plant as soon as is feasible after delivery.
- c. Lay out planting scheme before taking plants out of cold storage or have field ready before delivery if no cold storage is available.
- d. If using a transplanter, be sure it is in good running order before planting day.
- e. Soak roots in water for up to an hour before planting. Do not allow plants to sit in water much longer before planting but make sure they are moist until planted.
- f. Set dormant plants at the same depth as they were in the nursery. This may take some fine-tuning of the planter. Trim 'handles' to 6" at planting.
- g. Irrigate immediately after planting to settle soil around the plants.
- h. Apply a layer of organic mulch to help suppress weeds until plants are well established. Mulching is only recommended in raspberries during the establishment year. In subsequent years, mulch can lead to rot at the base of canes from excess moisture.
- i. Seed row middles to slow growing sod such as hard fescue to reduce soil erosion.

BLUEBERRY

Blueberry Disease Fast Fact Sheet; Mummyberry

Dena Fiacchino, Cathy Heidenreich, and Wolfram Koeller, Cornell University

What: Mummy berry is caused by the fungus, *Monilinia vaccinii-corymbosi*, and is one of the most important blueberry diseases in New York State. If left untreated, mummy berry can reduce yields by 30-40%. Early control and detection is necessary to reduce the impact of this disease.

When: The fungus overwinters in infected berries, or “mummies” on the soil under bushes. Mushroom-like structures (apothecia) grow out of the mummies (Figure 1). In early spring, ascospores are released from the apothecia to infect the newly emerging leaf tissue. These spores are disseminated by wind and rain. This step is the primary or shoot blight phase of the disease. Shoot blight symptoms typically develop 2 weeks after infection. Infected shoots and leaves wilt, turn brown, and die (Figure 2). Masses of secondary spores (conidia) are produced on infected shoot surfaces (Figure 3), which then infect flower blossoms, starting the second phase of the disease.

Where: Mummy berry occurs in most regions where blueberries are commercially grown. This fungus only infects cultivated blueberries and a few wild blueberry species. Generally, the disease is introduced from neighboring infected plantings or from wild blueberries in nearby woods.



Figure 3.

How: Under moist conditions in early spring, apothecia begin to form from mummified fruit remaining on the soil surface. The apothecia slowly develop as moisture levels and temperatures rise. At low temperatures such as 35° F, spores mature slowly taking 10+ hours to release, however at an increased temperature of 61° F, apothecia take about 4hrs to fully mature.

Conidia form on infected shoots, then are carried to flower blossoms by wind and pollinating bees (who are tricked by color changes and sugar secretion into thinking that the infected leaves might be flowers). Once the fungus has been introduced to the flower, it will germinate with the pollen and slowly infect the developing fruit. Evidence of blossom infection does not appear until the fruit begins to ripen. As normal berries ripen, the infected berries begin to shrivel and turn a pinkish color. (Figure 4) These "mummy berries" become filled with fungus, and have a hard grayish white center.



Figure 1.

They fall to the ground, shrivel up becoming pumpkin-shaped, and turn dark brown or black. These



Figure 2.

serve as an inoculum source the following spring when apothecia form and disease cycle begins again.

Control Strategies: Mummy berry can be a difficult disease to control. An integrated pest management program including both cultural and chemical control strategies is needed for best results. The best time to achieve control of this disease is during the primary infection phase.

- Rake or disk soil beneath the blueberry bushes or cover the fallen mummy berries with a 3-4 inch mulch layer before apothecia appear in the spring.
- Apply 200lbs/A of 50% urea to burn out apothecia.
- Fungicides may be used to control this disease during both disease phases. For control of the primary infection phase applications should begin at green tip and continue on 7-10 day intervals when conditions favor infection.



Figure 4.

For secondary infection control, make applications beginning at bloom on the same type of schedule. Different fungicides are required to control primary vs. secondary infections.

For more information see *Cornell Pest Management Guidelines for Berry Crops* [or *2008 New England Small Fruit Pest Management Guide*]. Apply all pesticides according to label rates and instructions.

References:

1. Caruso, F.L., and Ramsdell, D.C. (eds.) 1995. *Compendium of Blueberry and Cranberry Diseases*. APS Press, St. Paul Minn.
2. DeMarree, J.B., and Wilcox, M.S. 1947. *Fungi Pathogenic to Blueberries in the Eastern United States*. *Phytopathology* 37: 487-506.
3. Pritts, M.P. and Hancock, J.F. (eds.) 1992. *Highbush Blueberry Production Guide*. Northeast Regional Engineering Service, Ithaca, NY.
4. Schilder, Annemiek. 2005. *Michigan Blueberry Facts: Mummy Berry*. <http://www.blueberryfacts.org/mummyberryguide.html>. (Source: *New York Berry News*, Vol. 5, No. 2, March 31, 2006)

Blueberry Weed Management Choices

Eric Hanson, Michigan State Univ.

There are several preemergent herbicide choices for blueberries. To control weeds and avoid injury to bushes, become familiar with these products by reading the labels and consulting MSU Bulletin E-154, Fruit Management Guide, which contain current recommendations [Editors Note: or the 2010-2011 New England Small Fruit Pest Management Guide].

Most growers have two general weed control questions. First is choosing the early season preemergent program. The goal here is to choose an herbicide or combination of products that are strong on the dominant weeds. An effective choice will control most annuals and some perennials through the summer. The second consideration is how to manage established perennial weeds that are not effectively controlled by available preemergent products. This often requires careful use of glyphosate late in the season.

Preemergent programs - Princep (simazine), **Karmex** (diuron), **Sinbar** (terbacil), and **Solicam** (norflurazon) are the most common preemergent herbicides in established blueberries. They are moderately priced and control many germinating annual weeds for 1-3 months. These products can potentially injure blueberries so be familiar with the label precautions regarding sandy soils and young plants. Princep and Karmex tend to be stronger on broadleaf weeds, whereas Sinbar and Solicam are effective on grasses. Combining broadleaf and grass materials controls a broader spectrum of annual weeds.

Callisto and **Chateau** were recently labeled for use on blueberries. Callisto provides preemergent and postemergent control of several pigweed species, chickweeds, horsenettle, lambsquarters, marestail, eastern black nightshade, ragweed, and smartweed, but is very weak on grasses. Apply Callisto before bloom, either in one 6 fl. oz. per acre application, or two 3 oz. applications at least 14 days apart. Crop oil concentrate (COC) improves postemergent activity, but Callisto with COC may injure blueberry leaves and young stems. Avoid plant contact as much as possible. Callisto is labeled for young, non-bearing and bearing blueberries. Chateau is primarily a preemergent product with some postemergent activity if applied with surfactant or COC. Chickweeds, dandelion, common groundsel, lambsquarters, eastern black nightshade, several pigweeds, ragweed, and most annual grasses are controlled. Apply Chateau before bud break (getting late now) at 6 to 12 oz product per acre. Bushes need to have been in the field for 2 years.

Growers should work with Callisto and Chateau to learn how they perform on their farms. These herbicides have different modes of action in plants than the traditional blueberry herbicides such as Princep, Karmex, and Sinbar. As a result, they should be helpful in discouraging development of herbicide resistant weed populations. (Source: *Michigan Blueberry Newsletter*, April 6, 2010)

GRAPE

Weed Control in Vineyards

Andrew Senesac and Alice Wise, Cornell University

‘Weed control’ refers to the management of weeds in the 2-3 ft. strip under the trellis. The first step in developing a management strategy is to ID weed species. *Weeds of the Northeast*, co-authored by CCE Weed Specialist Dr. Andy Senesac, is a very useful reference to diagnose weed species and develop management strategies.

How much weed competition can vines tolerate? Young vines with shallow root systems may be negatively impacted by anything more than light weed cover. Older vines with deeper root systems can tolerate more competition assuming vines are not otherwise stressed. Between bloom and veraison is the most critical time to minimize weed competition. After veraison, a pristine strip under the trellis is not necessary though controlling tall weeds later in the season will minimize interference during harvest. Throughout the season, controlling younger, smaller weeds is easier than older, lignified, deep-rooted weeds or dense stands of weeds. Also, allowing weeds to reach maturity only increases the number of propagules (seeds, tubers, rhizomes) that will be present to deal with in the future. In local vineyards, the under trellis region is being managed with a range of strategies: herbicides, hand hoeing, mechanical cultivation, under trellis mowing, weed whacking and cover crops with follow up weed whacking. Sometimes growers use a combination of techniques. Each has advantages and disadvantages.

Hand hoeing is easiest to implement but hard to maintain long-term especially if weeds are larger and lignified. Mechanical weed control can be effective; however, timing is everything. Once weeds become well rooted and lignified, cultivation is difficult. Use of a cultivating implement requires a skilled tractor driver to avoid vine, trunk and root and trellis damage. Mechanical weeding long term may reduce soil organic matter and increase soil erosion. Alternating cultivation with a timely postemergent herbicide such as glyphosate or under trellis mowing may be one way around that concern.

In recent years, several vineyards have been mowing under the trellis. We have been evaluating under trellis mowing in research plots for the last three years. We have seen a slight but statistically significant reduction in vine size in plots where weed cover was maintained. One glyphosate in late June/early July mitigates that effect. We have not yet seen any impact on yield, cluster

architecture or fruit quality in Merlot or Chardonnay (the latter is a non-replicated demo plot). The hope was that set would be reduced slightly, an advantage in a rot-prone variety such as Chardonnay. We have a single sided mower mounted on a custom frame. With lots of practice, we can now mow an acre in about 3 hrs. In industry, dual under trellis mowing heads are mounted on a row middle mower, significantly decreasing labor costs. As with cultivation, mowing has to be timely. It is difficult to mow dense stands and/or tall weeds.

Growing of cover crops under the trellis has been the subject of many research projects. In the mid-90’s, we evaluated annual bluegrass and subterranean clover. At the time, the goal was to find winter annual species that died down during summer months to minimize competition with vines. Recent experiences however suggest that some competition during the summer months may actually be desirable. Especially in wet seasons, where repeated canopy hedging is necessary to manage vine shading, a reduction in vine size would be very beneficial.

Growers throughout the eastern US and on Long Island have also experimented with various combinations of grasses and clover. With the widespread use of drip irrigation in local vineyards, concerns about too much competition are alleviated. Disadvantages - establishment on a large scale is a challenge. Cover crop seed is another expense. Most especially, managing taller escape weeds by hand pulling and/or weed whacking is necessary to keep weeds out of the trellis.

Judicious herbicide application remains the most cost effective for under trellis management. Herbicides are divided into two groups: those that prevent weed seed from germinating (emerging), known as preemergence materials, and those that are applied to existing weeds, known as postemergence materials. Attention must be paid to weed species, as control of broadleaf weeds such as horseweed, dandelion, groundsel, pineappleweed etc. can be slightly different than that for grasses such as bluegrass, quackgrass, crabgrass etc.

For details on preemergence herbicides including a list of materials, check the vineyard manager list serv. (**Source:** *Long Island Fruit & Vegetable Update, No. 4, April 7, 2011*)

GENERAL INFORMATION

Critical Spring Temperatures for Tree Fruit and Small Fruit Bud Stages

Compiled by Mark Longstroth, MSU Extension

Pome Fruit									
Apples	Silver Tip	Green Tip	½ inch green	Tight Cluster	First Pink	Full Pink	First Bloom	Full Bloom	Post Bloom
Old	16	16	22	27	27	28	28	29	29
temp 10% kill	15	18	23	27	28	28	28	28	28
90% kill	2	10	15	21	24	25	25	25	25
Pears	Bud Swell	Bud Burst		Tight cluster	First White	Full White	First Bloom	Full Bloom	Post Bloom
Old	18	23		24	28	29	29	29	30
temp 10% kill	15	20		24	25	26	27	28	28
90% kill	0	6		15	19	22	23	24	24
Stone Fruit									
Apricots	Bud Swell	Bud Burst	Red Tip	First White	First Bloom	Full Bloom	In the Shuck	Green Fruit	
Old	--	23	--	25	--	28	--	31	
temp 10% kill	15	20	22	24	25	27	27	28	
90% kill	--	0	9	14	19	22	24	25	
Peaches	Bud Swell	Calyx Green	Calyx Red		First Pink	First Bloom	Full Bloom	Post Bloom	
Old	23	--	--		25	--	27	30	
temp 10% kill	18	21	23		25	26	27	28	
90% kill	1	5	9		15	21	24	25	
European Plums	Bud Swell	Side White	Tip Green	Tight Cluster	First White	First Bloom	Full Bloom	Post Bloom	
Old	--	--	--	--	23	27	27	30	
temp 10% kill	14	17	20	24	26	27	28	28	
90% kill	0	3	7	16	22	23	23	23	
Sweet Cherries	Bud Swell	Side Green	Green Tip	Tight Cluster	Open Cluster	First White	First Bloom	Full Bloom	Post Bloom
Old	23	23	25	28	28	29	29	29	30
temp 10% kill	17	22	25	26	27	27	28	28	28
90% kill	5	9	14	17	21	24	25	25	25
Tart Cherries	Bud Swell	Side Green	Green Tip	Tight Cluster	Open Cluster	First White	First Bloom	Full Bloom	
10% kill	15	24	26	26	28	28	28	28	
90% kill	0	10	22	24	24	24	24	24	
Small Fruits									
Concord Grapes	First Swell	Full Swell	Bud Burst	First Leaf	Second Leaf	Third Leaf	Fourth Leaf		
10% kill	13	21	25	27	28	28	28		
90% kill	-3	10	16	21	22	26	27		
Strawberries	Buds Emerged		Buds Closed			Bloom	Small Fruit		
Damage	10		22-27			28	28		
Blueberries	Bud Burst	Pink Bud	Open Flower	Petal Fall	Green Fruit				
Damage	< 20	< 25	27	28	28				

Old standard temperature is the lowest temperature that can be endured for 30 minutes without damage. This chart also shows the temperature that will kill 10 % and 90 % of normal fruit buds. These numbers were taken from Washington (WSU), Michigan (MSU) and North Carolina (NCS) Extension Bulletins. Apple - WSU EB0913, Pears - WSU EB0978, Sweet Cherries - WSU EB1128, Peaches - WSU EB0914, Apricots - WSU EB1240, Tart Cherries - MSU Research. Rpt. 220, Portions of these bulletins are posted at Gregg Lang's [Fruit Bud Hardiness Page](http://web1.msue.msu.edu/vanburen/frost.htm) at the [MSU Horticulture Department](http://web1.msue.msu.edu/vanburen/frost.htm) (Source: MSU Fruit Program Frost/Freeze page <http://web1.msue.msu.edu/vanburen/frost.htm>)

Lime Sulfur Sprays can Improve Spring Disease Control

by Mark Longstroth, MSU Extension

Early sprays of lime sulfur reduce disease inoculum in spring

Many diseases of woody perennial plants overwinter as lesions on the plant or areas that were killed the previous year. Spores from last year's infection reinfest new growth in the spring. Caustic sprays in the early spring can burn the lesions, killing or damaging the fungal spores before they are released in the spring.

Lime sulfur is an effective dormant spray when applied early in the season as growth begins. When applied as a true dormant spray before growth begins, lime sulfur can be used with oil to increase the penetration of the caustic sulfur into the surface of the infected tissues. Once green tissue appears, oil should not be mixed with oil. Oil will carry sulfur into green plant tissue causing injury. It is generally recommended to not use oil within a week of a sulfur spray when green tissue is exposed. Lime sulfur rates should be reduced when green tissue is exposed. Recommended rates vary for different products with dormant rates in the 10 to 12 pounds per 100 gals of water to 5 or 6 pounds when green tissue is exposed.

Lime sulfur (calcium polysulfide) is a caustic material and after application it breaks down, releasing sulfur. It is

very effective against diseases that overwinter on the host. Lime sulfur is also effective against many insect pests that overwinter on the plant.

Lime sulfur is registered for use on most fruits, but is most commonly used on small fruit. Lime sulfur is used on brambles to control anthracnose, spur blight and cane blight. In blueberries, the diseases controlled include phomopsis and anthracnose twig blights. In grapes, lime sulfur is effective against black rot, powdery mildew and phomopsis. Lime sulfur is also used in apples, pears, peaches and cherries.

Some formulations of lime sulfur are OMRI certified as organic, but check with your certifier for confirmation.

Sulforix is a commercial formulation of lime sulfur. It can also be used as a dormant spray to burn overwintering fungal lesions. Sulforix is also registered for application during the growing season in some crops, especially in the prebloom period.

(Source: Michigan State University CANR News, April 6, 2011)

Brown Marmorated Stink Bug A New Threat to New Jersey and New England's Agriculture

George Hamilton, Pest Management Specialist, Rutgers Cooperative Extension

The brown marmorated stink bug (BMSB), *Halyomorpha halys* (Stål), is an exotic insect belonging to the order Hemiptera or true bugs. BMSB, sometimes also called the yellow-brown stink bug or East Asian stink bug, is native to China, Korea and Japan and is considered an important agricultural pest in soybeans and tree crops in Japan.



This non-native stink bug was first collected in the United States in Allentown, PA, during the fall of 1996. In New Jersey, BMSB was recovered in 1999 from a Rutgers Cooperative Extension Vegetable IPM program black light trap in Milford, NJ. Since 2000, BMSB has spread

throughout Pennsylvania and New Jersey.



BMSB has also spread to other parts of the United States. Early on it was only found in Delaware, Maryland, New Jersey and Pennsylvania. Today, in addition to these states, it is present in California, Georgia, Illinois, Indiana, Kentucky, Mississippi, New Hampshire, New York, North Carolina, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Virginia and West Virginia.

BMSB eggs are elliptical, light green in color and are deposited in a cluster of 20 to 30 eggs on the under-side of leaves. Immatures go through five nymphal stages (instars) and range in size from 2.4 mm in the first instar to 12 mm in length during the final instar. Immatures are characterized by dark red eyes and a yellowish-red abdomen as first instars. In later instars, the abdomen gradually turns to off- white with reddish spots.



Adults are approximately 17 mm long, generally brown in color with characteristic white (or off- white) antennal segments and darker bands on the membranous, overlapping part, at the rear of the wings. They also have patches of coppery or bluish metallic-colored punctures on the head and pronotum. Scent glands are located on the dorsal surface of the abdomen and the underside of the thorax. These glands are responsible for producing the pungent odor that characterizes “stink bugs.”

The brown marmorated stink bug is a sucking insect that uses its mouthparts to pierce the host plant to feed. Feeding results, in part, in the formation of small, necrotic areas just under the skin and sometimes on the outer surface of fruits and leaves of its hosts. In tree fruit, it can cause characteristic cat-facing injury due to early season feeding. In its native range, BMSB feeds on a variety of fruits and other host plants including apples, cherry,

citrus, figs, mulberry, peach, pear, peppers, persimmon, soybeans and tomatoes. In Pennsylvania and New Jersey, BMSB has been observed feeding on many ornamental plants, fruit trees, legumes, and vegetables and was shown to cause significant damage in pears and apples on two farms. Based on this, it was predicted that BMSB could become a significant agricultural pest.



In 2009, this prediction began to come true. That year, in the fruit growing regions of Virginia and West Virginia, BMSB caused severe late season injury to peaches and apples with some orchards exhibiting 40- 50% damage. This year, the same thing happened in Virginia and West Virginia not only in tree fruit but also in vegetables. It was also seen feeding in soybeans. In addition, many growers in New Jersey, Pennsylvania, Maryland and Delaware also saw significant damage in tree fruit and peppers. It was also seen feeding in field and sweet corn and several other vegetables.

As you might imagine, researchers in the mid- Atlantic and northeastern states are very concerned. Chemicals controls for this insect in tree fruit and vegetables are available; however, their use may disrupt current IPM programs that rely on natural enemies to keep certain pests in check. Because of this, research is currently underway to develop chemical and non- chemical alternatives to properly manage this new pest. (*Source: Fruit Notes, Vol 75, Fall, 2010*)

UPCOMING MEETINGS:

- April 15, 2011** - *2011 Fruit Pruning Demonstration for Home Gardeners* (05:30 PM - 07:00 PM) UNH Cooperative Extension Educators will explain and demonstrate fruit pruning techniques. Dress appropriately for the weather with proper clothing and foot gear. Location: Brookdale Fruit Farm Packinghouse, Broad Street, Hollis, NH. 1 mile east of the Routes 122 & 130 intersection. Features pruning mature grape vines. For more information, call George Hamilton at 641-6060 or email george.hamilton@unh.edu
- April 20, 2010** - *NH Fruit Growers' Twilight Meeting* (05:30 PM - 07:30 PM) The NH Fruit Growers Association is sponsoring this statewide commercial tree fruit grower's twilight meeting. UNHCE Specialists will be present to discuss pest management options, and orchard management. Two (2.0) New Hampshire pesticide license recertification credits will be offered. You must sign in by 5:30 p.m. to receive pesticide credits! For more information, see the [flyer](#) or call George Hamilton at 641-6060 or email george.hamilton@unh.edu. **Location** - Oliver Merrill & Sons hosted by the Merrill Farm, 569 Mammoth Rd., Londonderry, NH,
- April 26, 2011** – *High Tunnel Berry Production Workshop*. 9am to 4 pm at the Radisson Hotel in Manchester NH. This workshop will provide growers with up-to-date information, and research and extension personnel with information on grower needs. Featuring Kathy Demchak from Penn State Univ. and local Extension staff and grower panel. Pesticide recertification credit offered. Cost: \$30 includes lunch. For more info please contact Suzanne Hebert by phone at 603-862-3200 or email suzanne.hebert@unh.edu.
- April 30, 2011** – *Weed Management* at Nuestras Raices Farm, 24 Jones Ferry Rd, Holyoke MA, 10:00-12:00. Participants will learn to identify different types of weeds, plastic mulch application, flamer use, and other weed control techniques. For more information or to register, contact Amy at 413-535-1789
- May 14, 2010** - *Insecticide Application and Pesticide Safety* at Nuestras Raices Farm, 24 Jones Ferry Rd, Holyoke MA, 10:00-12:00 Ruth Hazzard, UMass Extension Vegetable Production Educator Participants will learn how to identify damaging pests, and the basics and safety of choosing an insecticide for application. For more information or to register, contact Amy at 413-535-1789
- June 8, 2011** – *Canopy Management in Hybrids for Quality Wines*, Grape Twilight Meeting co-sponsored with the [Massachusetts Farm Winery and Growers Association](#), UMass Cold Spring Orchard 391 Sabin Street, Belchertown, MA 01007. Featuring Justine Vanden Heuvel and Anna Katherine Mansfield from Cornell University. For more information or to register contact Sonia Schloemann via email at sgs@umext.umass.edu.
- June 22-26, 2011**. *10th International Rubus and Ribes Symposium, Zlatibor, Serbia*. For more information contact: Prof. Dr. Mihailo Nikolic, Faculty of Agriculture, University of Belgr, Belgrade, Serbia. Phone: (381)63 801 99 23. Or contact Brankica Tanovic, Pesticide & Environment Research Inst., Belgrade, Serbia. Phone: (381) 11-31-61-773.

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