

The University of Maryland Extension Agriculture and Natural Resources Profitability Impact Team proudly presents this bi-weekly publication for the commercial vegetable and fruit industry.

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Field Observations from Southern Maryland

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- ✓ Rains throughout the region and moderate temperatures have created good growing conditions.
- ✓ Most crops have good fruit set.
- ✓ Farmers are busy weeding, cultivating, spraying and beginning to harvest early season crops.
- ✓ Vine crops are beginning to run.
- ✓ The first sweet corn started coming off last week.
- ✓ Cucumber beetles and squash bug populations have increased and there are a number of issues with feeding injury to the base of plants and vines.
- ✓ Timber rot remains an issue in high tunnels.

Field Observations from WyeREC

By Michael Newell
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June 6, 2012

Strawberry Plasticulture

- ✓ It's turned out to be a record year for yields here at the Wye. Chandler harvest has ended, but Sweet Charlie harvest is still going. The mild fall and winter along with the infrequent warm spells this spring all contributed to this year's high and continued yields.
- ✓ It is already time to plan for next year's strawberry crop. Order your plants and/or tips in early June. This link to a list of plant suppliers is courtesy of the North Carolina Strawberry Association. Consider joining this organization for some great timely strawberry information at:
<http://www.ncstrawberry.org/docs/2012PlantSupplierList.pdf>

- ✓ Consider growing a summer cover crop to increase soil organic matter & Take action on those troublesome perennial weeds
- ✓ Carrying over strawberry plants for a second harvest has been effective for some growers. If you have a history of anthracnose, DO NOT CARRY-OVER the planting. The challenge is to manage the plant so that crop load is adjusted to maintain good fruit size. After harvest remove old leaves and fruit. Keep the plant growing with minimal irrigations, but refrain from fertilizer applications until early September. Continue sprays for leaf diseases and monitor and treat for insect pest. Crown thinning will be needed before September, this is critical for maintaining good fruit size.
- ✓ Double-cropping the plastic to utilize the existing inputs can be done. If the plastic is in good shape some growers will plant vegetables after the strawberries are finished. Kill the strawberry plants with one or two applications of Gramoxone. Leaving the dead plant in place will help keep weeds from emerging from the hole. However, we have seen some staining on muskmelon if the fruit lies on the dead strawberry plants. Never apply residual herbicides over the row, this could allow for the herbicide to concentrate in the planting hole. Standard herbicides recommended for the second crop can be used between the rows. Fertility levels will need to be adjusted through the drip system for the second crop. Pumpkins have worked well for us here as a second crop.

Perennial Matted-Row Strawberry Culture

- ✓ After harvest, renovation procedures need to be done to maintain a productive field. If broadleaf weeds are a problem, apply 2,4-D herbicide, wait two weeks then mow the leaves off. Narrow the rows to about 10 inches. Using an implement that can apply additional soil (1/4 inch) onto the remaining crowns will increase adventitious rooting. Apply residual herbicides and 30-50 lbs. nitrogen. Keep plants in good health with insect and disease control and don't forget to irrigate.

Apples

- ✓ Continue removal of Fireblight strikes during dry conditions. Think about summer disease spray programs.

Grapes

- ✓ Pre-bloom to 2-4 weeks after bloom is the most critical period to provide protection of vines and fruits from Black rot, Phomopsis, Downy Mildew and Powdery Mildew.
- ✓ Shoot thinning and positioning is in full swing, it gets more difficult to do from this point forward.

Vegetable Crop Insect Update

By Joanne Whalen
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June 1, 2012

Cucumbers

As expected, cucumber beetle activity increased significantly this past week so be sure to scout for beetles as well as aphids. Fresh market cucumbers are susceptible to bacterial wilt, so treatments should be applied before beetles feed extensively on cotyledons and the first true leaves. Although pickling cucumbers have a tolerance to wilt, a treatment may still be needed for machine-harvested pickling cucumbers when 5% of plants are infested with beetles and/or plants are showing fresh feeding injury. A treatment should be applied for aphids if 10 to 20 percent of the plants are infested with aphids with 5 or more aphids per leaf.

Melons

Continue to scout all melons for aphids, cucumber beetles, and spider mites. We are finding fields with economic levels of cucumber beetles and spider mites. The threshold for mites is 20-30% infested crowns with 1-2 mites per leaf. Since beetles can continue to re-infest fields as well as hide under the plastic, be sure to check carefully for beetles as well as their feeding damage. Multiple applications are often needed to achieve effective control. Now that fields are blooming, it is important to consider pollinators when making an insecticide application:

<http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf>

Peppers

Continue to sample for corn borers and watch carefully for egg masses. Before fruit is present these young corn borer larvae can infest stems and petioles. As soon as the first flowers can be found, be sure to consider a corn borer treatment. Depending on local corn borer trap catches, sprays should be applied on a 7 to 10-day schedule once pepper fruit is ¼ – ½ inch in diameter.

Be sure to check local moth catches in your area by calling the Crop Pest Hotline (instate: 800-345-7544; out of state: 302-831-8851) or visiting our website at: <http://ag.udel.edu/extension/IPM/traps/latestblt.html>

You should also watch for an increase in aphid populations. A treatment may be needed prior to fruit set if you find 1-2 aphids per leaf for at least 2 consecutive weeks and beneficial activity is low.

Potatoes

Continue to scout fields for Colorado potato beetle (CPB), corn borers (ECB) and leafhoppers. Adult CPB as well as the small and large larvae can now be found. A treatment should be considered for adults when you find 25 beetles per 50 plants and defoliation has reached the 10% level. Once larvae are detected, the threshold is 4 small larvae per plant or 1.5 large larvae per plant. As a general guideline, controls should be applied for leafhoppers if you find ½ to one adult per sweep and/or one nymph per every 10 leaves.

Snap Beans

Continue to sample all seedling stage fields for leafhopper and thrips activity. The thrips threshold is 5-6 per leaflet and the leafhopper threshold is 5 per sweep. If both insects are present, the threshold for each should be reduced by 1/3. As a general guideline, once corn borer catches reach 2 per night, fresh market and processing snap beans in the bud to pin stages should be sprayed for corn borer. Sprays will be needed at the bud and pin stages on processing beans. Once pins are present on fresh market snap beans and corn borer trap catches are above 2 per night, a 7 to 10-day schedule should be maintained for corn borer control at:

<http://ag.udel.edu/extension/IPM/traps/latestblt.html>

and

<http://ag.udel.edu/extension/IPM/thresh/snapbeanecbthresh.html>

We recently learned that succulent beans will be removed from the acephate label – this applies to all labeled formulations. At this point, we have been told that existing stocks that include the green/succulent bean usage can be sold and/or distributed under the previously approved labeling until March 14, 2013, unless EPA imposes further restrictions. We will be sure to update you as we receive more information.

Sweet Corn

Continue to sample seedling stage fields for cutworms and flea beetles. You should also sample whorl through pre-tassel stage corn for corn borers and corn earworms. A treatment should be applied if 15% of the plants are infested with larvae. We have also seen an increase in corn earworm catches, especially in pheromone traps, so be sure to watch carefully for small larvae being found in tassels. The first silk sprays will be needed for corn earworm as soon as ear shanks are visible. Be sure to check both blacklight and pheromone trap catches since the spray schedules can quickly change. Trap catches are generally updated on Tuesday

and Friday mornings at:

<http://ag.udel.edu/extension/IPM/traps/latestblt.html>

and <http://ag.udel.edu/extension/IPM/thresh/silkspraythresh.html>

You can also call the Crop Pest Hotline for the most recent trap catches (in state: 800-345-7544; out of state: 302-831-8851.)

<http://ag.udel.edu/extension/IPM/traps/latestblt.html>

Cucurbit Downy Mildew Found in New Jersey

By Kate Everts, Vegetable Pathologist,
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Cucumber downy mildew was confirmed in Gloucester County, NJ on May 30 and reports of CDM from North Carolina are increasing. Cucumber growers are encouraged to apply preventative fungicides immediately and scout their crop for symptoms of disease. The progress of the disease can be monitored online at North Carolina State University's Cucurbit Downy Mildew Forecasting Center at <http://cdm.ipmpipe.org/index.php>.

Downy Mildew on Cucurbits

Cucumber growers should monitor their crops for downy mildew. Symptoms of downy mildew on cucumber are angular yellow to tan lesions on the upper surface of the leaf and brown to black sporulation on the lower surface (Figure 4).

Downy mildew was found a second time last week in North Carolina on greenhouse grown cucumbers. This outbreak may have started two months ago. Although there are no reports north of the Carolinas, it is extremely troubling that downy mildew is present there so early in the season. Growers should scout their fields and monitor the Cucurbit Downy Mildew IPM PIPE site: <http://cdm.ipmpipe.org/> for the progress of the disease. Preventative fungicide applications should begin when disease occurrence is predicted in our region.



Figure 4. Downy mildew on cucumber leaf. Angular necrosis on upper leaf surface and dark sporulation on lower leaf surface.



Late Blight Surrounds Maryland A Time for Vigilance

By Kate Everts, Vegetable Pathologist,
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This is an alert to inform you that late blight has been confirmed in most of the states that border Maryland. It has been confirmed on potato on Virginia's Eastern Shore, tomato and potato in Pennsylvania, and potato in New Jersey. Late blight has also been found on Long Island, NY.

Not all of the isolates have been genotyped, yet. However, where it is known (NY and NJ outbreaks), the isolates were determined to be US23. US 23 is characterized with A1 mating type, is pathogenic to both tomato and potato, and is sensitive to mefenoxam (the active ingredient in Ridomil Gold). Growers in Maryland and Delaware should be on alert and scout rigorously. Here is a link from the Pennsylvania report at: <http://extension.psu.edu/vegetable-fruit/blog/2012/late-blight-confirmed-on-tomato-and-potato-in-pennsylvania>

Late Blight on Potato and Tomato

Late blight has been found on potato in central New Jersey. The grower was applying preventative fungicides, however lesions occurred in a part of the field that the sprayer missed. All potato and tomato crops are susceptible to this disease. Growers should scout and apply preventative fungicides to protect their crops. Chlorothalonil, mancozeb or Polyram can be applied to potato and chlorothalonil, Gavel, or mancozeb can be applied to tomato. Complete coverage of the field is extremely important. Once late blight has been found close to a growers' field, switch to a fungicide that is late blight specific. More information on available fungicides for this disease can be found at:

<http://mdvegdisase.umd.edu/files/Maryland%20complete%20book%202012.pdf>

Controlling late blight in organic systems is extremely difficult. Organic growers should apply a protectant such as copper to their crop. Serenade, Sonata and Sporotec are OMRI listed, and labeled for late blight. (However, there are very few research trials on efficacy of these products). It is critical to apply these materials with adequate coverage and at short spray intervals.

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Watch for Striped Cucumber Beetle and Squash Bugs at Base of Cucurbit Plants

By Jerry Brust, IPM Vegetable Specialist
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I talk about this every year it seems, but I still see cucumber beetle and squash bug problems at the base of growers' cucurbit plants. So far this has been a 'good' year for striped cucumber beetle and squash bug populations in just about every cucurbit field. Some fields have been hit particularly hard with beetles causing 5-10% plant loss due just to their feeding. The biggest problem with these pests and why control sprays have not worked well is that they are consistently hiding at the base of the plant where they are feeding on the stem. Most of the time we look for the foliage damage to tell us how well our spray program is working.

Sprayers are set up usually to cover a lot of leaf canopy and do not do a very good job of putting chemical along the base of the stem. This stem feeding can be severe enough on small plants that either pest alone could cause some wilting, but with both feeding on this relatively small area of the stem they are causing considerable damage (fig 1), even on larger plants the feeding can still cause significant damage (fig 2). It is hard enough to kill squash bug adults with a good cover spray, but when only small amounts of spray are reaching them on the lower stem they will not be controlled.

Often it is possible to walk by plants and even inspect them and still see no beetles or squash bugs, as they will stay down at the base of the plant and only move when the base is exposed. In a couple fields about 10% of the plants were wilting (fig 3) due to squash bug and cucumber beetle feeding. These pictures are from a squash field but the same problem is occurring in watermelon and cantaloupe fields with both striped cucumber beetles and squash bugs feeding at the base of a plant. Growers need to check to see if this type of feeding is occurring in their fields and if so insecticide applications (pyrethroids such as Asana, Warrior, etc.) must be directed at the base of the plant.



Photo 1. SWD adult male

Fig. 2 Larger cucurbit plant with feeding at its base by cucumber beetle



Fig. 3 Wilting squash plant due to squash bug and cucumber beetle feeding at its base



Managing Diseases of High Tunnel Tomatoes

By Kate Everts
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I have received several questions about timber rot caused by *Sclerotinia sclerotiorum*, leaf mold caused by *Fulvia fulva*, and gray mold caused by *Botrytis cinerea* over the past week for greenhouse and high tunnel tomatoes in Maryland and Delaware.

Timber rot is common where tomatoes (or another susceptible host) have been planted in ground beds in the past. The fungus *Sclerotinia sclerotiorum* causes disease on hundreds of plant species. Therefore rotation is difficult. Even when a high tunnel is moved between seasons, the disease can be severe because the fungus overwinters both in and around the tunnels. Usually the **primary** source of inoculum is outside of a high tunnel.

In the spring when the soil is moist, the fungal fruiting bodies emerge and spores (ascospores) are released. These ascospores will be released continually throughout



Fig. 1 Striped cucumber beetle feeding damage at base of a small squash plant

the spring and are carried on wind into the doors or raised sides of nearby high tunnels. Ascospores are usually carried or dispersed less than 330 feet. Therefore it is important to use sanitation within 330 feet of a high tunnel. No plants, leaf clippings, potting mix, or soil from the tunnels should be discarded within this area.

There are some practices that will help reduce timber rot pressure, such as minimizing the length of time that the soil stays wet. The biocontrol, Contans has been effective in managing Sclerotinia diseases in the field. Contans, which is a formulation of the fungus *Coniothyrium minitans*, parasitizes the survival structures of *S. sclerotiorum*. If it is sprayed on the area around the high tunnel and watered into the soil, it may help reduce ascospore formation in future years. Because the product is a live organism, it must be handled carefully to preserve its effectiveness. Contans would be a good choice for fields or areas around high tunnels, which are used repeatedly for a susceptible crop. See the Contans label for additional information. Other products labeled for Sclerotinia timber rot are Endura, which is labeled for field use, and Botran, which is labeled for greenhouse use.

Leaf mold and gray mold are both favored by high humidity and therefore improving air flow can reduce the extent of disease spread. There are several fungicides that are labeled for greenhouse use that will help reduce disease. These include Scala for leaf mold, Mycostop and Decree for suppressing gray mold, mancozeb products such as Dithane F-45, and copper. In addition to timber rot, Botran has activity on gray mold.

SWD & BSMB Invasion Update Central/Western Maryland

By Bryan Butler
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Fruit Agent, UME

Brown Marmorated Stink Bug (BMSB) have finally really began their big move last week. It is time to start watching all fruit and vegetable crops closely for that first big movement of BMSB from overwintering site into crops for a good meal so they can begin mating. It is important not to let them begin laying eggs in your plantings. Damage has shown up in Central Maryland in Peaches, Nectarines and they are present in Brambles especially black raspberries. **See the attached BMSB spray product efficacy chart.**

Spotted Wing Drosophila (SWD) traps have still remained clean in central and western Maryland but it is important to keep an eye out for Cherry fruit flies in sweet cherries. In strawberries sap beetles caused the biggest challenge this season and any sap beetle sprays would have picked up SWD but even in untreated blocks it appears we dodged the bullet with SWD in strawberries this year. However, it will be important to keep watching ever bearers for the entire season.

The following chart may prove very helpful if you do get into a situation with SWD in small fruits:

Management of Spotted Wing Drosophila

K. Demchak, D. Biddinger, and B. Butler

Trade name	Active Ingredient	Pre-harvest interval in days. "X" = the material is not labeled for use on the crop.				Effectiveness	Length of Residual Activity
		Raspberries	Blackberries	Strawberries	Cherries		
Pyrethroids and pyrethrins (IRAC activity group 3A)							
Brigade	bifenthrin	3	3	0	X	Excellent	7 days
Danitol	fenpropathrin	3*	3*	2*	3*	Excellent	7 days
Baythroid	beta-cyfluthrin	X	X	X	7*	Excellent	7 days
Mustang Max	zeta-cypermethrin	1*	1*	X	14*	Excellent	7 days
PyGanic**	pyrethrins	0	0	0	0	Good***	2 days
Spinosyns (IRAC activity group 5)							
Delegate	spinetoram	1*	1*	X	7*	Excellent	5-7 days
Spintor	spinosad	1	1	1	7	Excellent	5-7 days
Success	spinosad	1*	1*	1	7*	Excellent	5-7 days
Entrust**	spinosad	1*	1*	1	7*	Excellent	3-5 days
Organophosphates (IRAC activity group 1B)							
Malathion	malathion	1	1	3	3	Excellent	>7 days
Diazinon	diazinon	X	X	5	21	Excellent	>7 days

Options for Postemergence Weed Control in Sweet Corn

By Mark VanGessel
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Two broad-spectrum herbicides that have exhibited good crop safety to sweet corn are Impact and Laudis. Both products perform better with 0.25 to 0.5 lbs of atrazine. Both will control a broad range of weeds and grasses. It is important to consider crop rotation prior to treating sweet corn fields with a postemergence herbicide. Double-cropped vegetables are very problematic since few products allow such short rotations. Products that will allow double-cropping include Aim, Basagran, and Cadet. But these products only control small (less than 2 to 3 inches tall) plants. Most other herbicides are either not labeled for short rotations, or they have precautions about potential crop injury. Be sure to read and follow herbicide labels.



Day Neutral Strawberry Production

By Gordon Johnson, Extension Vegetable & Fruit Specialist, University of Delaware;
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Strawberry season started early this year and is now winding down. The heat over the holiday weekend has essentially shut down additional flowering and fruiting in our spring bearing varieties so expect limited production into June. The critical high temperature for strawberries varies but any temperatures in the high 80s or 90s will reduce or stop flowering altogether.

There has been significant interest in the use of repeat blooming strawberries for extended production. These "day neutral" varieties can provide good spring production with continued production into the summer and fall, depending on the planting date. Day neutral strawberries are different from spring bearing types because they are not triggered to flower by daylength and can flower and fruit repeatedly as long as temperatures are suitable. Day neutrals vary in their ability to flower during the summer, and have been classified as either weak or strong. Strong day neutrals produce flowers and runner sparsely during the summer, flowers form on runners, and plants tend to be small with a moderate number of crowns. Intermediate and weak day neutrals, have more of the spring bearing characteristics, such as a stronger tendency to runner in summer. We recommend strong day neutrals for summer and fall production in our area.

In the past, the day neutral varieties Tribute and Tristar were used in this region; however, berry size is small. Certain day neutral varieties bred for use in other regions (California and Northern Europe) have been successfully used in this region and have larger berry size and higher yields, Seascape, Evie 2 and Evie 3 for example. Unfortunately these varieties have soft berries. Albion has shown good promise as a day neutral with large firm berries, small plants, and long term, even production and low disease pressure. It is lower yielding than others but works well in our region. Other California bred day neutral varieties such as Monterey and Portola have shown promise for our area. The USDA breeding program in Beltsville, MD is currently selecting day neutral varieties that would be better adapted to our region.

Day neutrals can be planted in the spring for summer, fall and carryover spring production; planted in summer for fall and carry over spring production; and planted in fall for spring, summer and fall production the next year.

For summer production with day neutral varieties, the use of aluminized reflective plastic mulch with drip irrigation is recommended. Additional provision for heat abatement will be necessary. This may include low volume misters for evaporative cooling during hot daytime temperatures or the use of white or reflective shade cloth. Drip irrigation should be run during the day to further limit bed heating.

Remove runners from all plants throughout the season. Runnering decreases markedly after fruiting begins, so while this task is somewhat intensive early in the season, it becomes insignificant later.

Flowers should be removed for 6 weeks following planting to allow the plants to achieve sufficient size for fruiting. Failure to remove flowers will result in small plants and low yields. Extending the period of flower removal beyond 6 weeks will result in larger plants, berries and second-year yield, but less production in the first year. Varying the flower removal period will not affect the timing of production peaks.

Day neutrals benefit from a continuous supply of nitrogen and potassium. Additional phosphorus is not necessary provided an adequate supply has been incorporated before planting. Apply 5 to 6 lbs/A of nitrogen through the drip irrigation system every week. Calcium nitrate is the preferred source of nitrogen early in the season, UAN solution can be substituted when temperatures warm. Supplement preplant potassium with 10 lb/A of K₂O at monthly intervals, or 2 lb/A at weekly intervals through the drip irrigation system during the growing season. Day neutrals tend to be heavy consumers of boron because of their large commitment to reproduction. Monitor leaves occasionally to ensure that boron levels do not fall below 30 ppm. An application of 2 lb/A Solubor may be required in midsummer if boron levels are too low.

Gray mold is the biggest disease problem of day neutral strawberries. Because berries are continuously present, mold inoculum tends to increase during the season. Remove moldy berries from the planting, and protect flowers every 10 days to 2 weeks with an application of fungicide, especially after rainy periods.

To extend production in the fall floating row covers, clear row covers, or a combination can be used to conserve heat. If fall production is to be targeted, mid-summer plantings on black plastic mulch would be recommended but overhead irrigation is essential for establishment.

Day neutral plantings can be carried over to a second year. Plants should be cut back and crown thinning may be necessary in some varieties. Some information in this article was taken from this factsheet at:
<http://www.omafr.gov.on.ca/english/crops/facts/89-099.htm>

Cedar Apple & Quince Rust Forgotten Apple Foes

By R. David Myers
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I believe my first college student assignment given to me by my grandfather was to diagnose and develop a control strategy for cedar apple rust. I remember consulting the Extension Bulletins and Childers Modern Fruit Science text (8th edition 1978) to offer the following guidance that still rings true today:

1) If possible, locate and cut down all cedar within close proximity to the apple orchard. I was amazed to discover that some states in apple production districts required mandatory cutting of cedars within 5 miles of commercial apple orchards. Mandatory cedar eradication is no longer practical due to the fragmentation of the orchard industry, and thankfully the development of a number of very effective fungicides.

2) An orchardist must maintain a spray schedule that includes products like Rally, Indar, Rubigan combined with Ziram or Mancozeb from bloom through the 3rd cover spray. It is important to keep in mind that Captan alone is not very effective for controlling Cedar Apple and Quince Rust.

The photo taken of infected apples recently discovered in a local MD orchard should remind us of this sometime forgotten foe that Cedar apple Rust and Quince Rust can be.



2012 MSHS Summer Tour Touring Farms and Farm Markets in Adam's County PA

Wednesday, July 11, 2012

8:00 AM to 3:30 PM

Carpool: Participants will meet at **Adams County Nursery, 26 Nursery Road, Aspers, PA** to carpool.

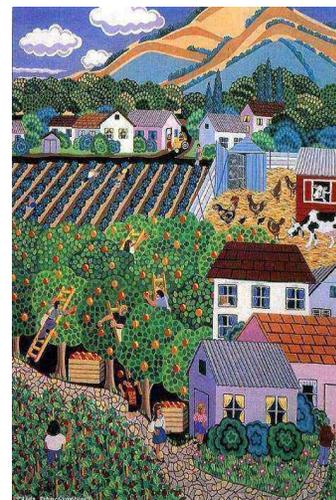
Cost \$15.00 (includes lunch and beverages)

Sponsored by:

Maryland State Horticultural Society (MSHS) & University of Maryland Extension

Tour Stops:

- ✓ **Three Springs Fruit Farm**
- ✓ **Hollabaugh Fruit Farm and Market**
- ✓ **National Apple Museum**
- ✓ **Adam's County Nursery**



Registration deadline July 2, 2012

Registration form and the agenda go to:

<http://www.grapesandfruit.umd.edu/Calendar/2012SummerTourBroc071112REV.pdf>

Driving Directions:

<http://www.grapesandfruit.umd.edu/Calendar/Summer%20Tour%20Directions071112.pdf>

Vegetable & Fruit Headline News

A bi-weekly publication for the commercial vegetable and fruit industry available electronically in 2012 from April through September on the following dates: April 12 & 26; May 10 & 24; June 7 & 21; July 12 & 26; August 16; September 6

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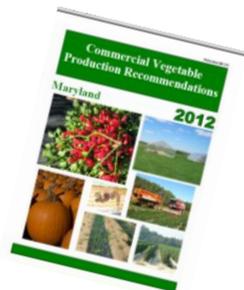
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Article submission deadlines for 2012: April 11 & 25;
May 9 & 23; June 6 & 20; July 11 & 25; August 15; September 5

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Performance of Selected Insecticides on Brown Marmorated Stink Bug

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Selected insecticides were evaluated at Virginia Tech in 2011 using green bean dip bioassays on brown marmorated stink bug nymphs and adults, as well as field efficacy trials on bell peppers. For the latter, four weekly spray applications were made using a backpack sprayer, and % stink bug injury to pepper fruit was assessed on three post-spray harvest dates (in Aug). Insecticides were ranked based on their average performance across all three experiments.

Product	Rate oz/Acre	% mortality from bean dip bioassay*		% control in the field: peppers**	Avg. % control from all three experiments
		Nymph	Adult		
Permethrin 3.2EC	8	97.5	98.8	60.6	85.6
Scorpion 3.24	7.7	76.7	90.0	85.4	84.0
Bifenture 10DF	12.8	100.0	81.9	56.3	79.4
Trebon	8	100.0	100.0	36.5	78.8
Baythroid XL	2.8	92.5	88.2	52.8	77.8
Venom 70	4	100.0	80.0	46.0	75.3
Endigo ZC	4.5	75.0	98.7	49.2	74.3
Acephate 97UP	16	100.0	51.8	70.4	74.1
Lannate LV	40	66.7	75.3	79.8	73.9
Leverage 360	2.8 ^a	97.3	74.5	49.9	73.9
Brigadier	9.85	76.7	70.0	69.9	72.2
Hero EC	10.3	91.7	50.0	72.8	71.5
Vydate L	48	85.0	47.0	79.7	70.6
Warrior II	2.5	100.0	72.8	38.0	70.3
Belay	4	75.0	67.5	66.7	69.7
Actara 50 WG	5.5	66.7	81.0	60.3	69.3
MustangMax	4	100.0	35.0	72.8	69.3
Danitol	16	93.3	42.5	60.3	65.4
Assail 30 G	4	90.0	32.8	70.4	64.4
Lambda-cy	3.84	86.0	32.3	62.0	60.1
Asana XL	9	35.0	27.5	76.4	46.3

* Mortality refers to the percentage of dead + moribund individuals after 72 hrs.

** Based on reduction in stink bug injury to pepper fruit from three harvests.

^a Not the highest labeled rate for all vegetables.