

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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- ✓ Transplanting of warm season crops is in full swing.
- ✓ The first high tunnel tomatoes have been harvested over the last two weeks.
- ✓ Strawberry harvest continues.
- ✓ Pest problems have been minimal so far.
- ✓ Timber Rot has been observed on tomatoes and some ornamentals.
- ✓ Root maggots have been a problem on some earlier planted crops.

## Spring Observations from WYEREC

By Michael Newell  
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### Conditions at WYEREC April 25 2011

**Peaches:** We are 30 days past full bloom here at Wye REC. I have applied 2 scab sprays and will apply at least 2 more. After shuck fall, a Sulfur based program can be safely used for brown rot control. However, sulfur is only rated as "Good" for brown rot and scab. If bacterial spot has been problematic in the past, oxytetracycline products should be applied anytime wet and windy weather is expected. Fruit at this stage can also be very susceptible to bacterial spot. Coppers should be applied at leaf drop in problematic orchards to prevent future reinfection.

If chemical or mechanical bloom thinning was not done, hand thinning is generally done between 30 and 50 days after full bloom. Thinning done later than 50 days after bloom can result in smaller fruit size. Increasing the distance between fruits along a shoot will increase fruit size.

**Apples:** Late bloom can still be found on some varieties so we still should be aware of possible Fireblight infections. I can now see fireblight strikes on trees that did not receive antibiotic sprays during bloom. Read more about what to do about Fireblight at:

[http://www.caf.wvu.edu/kearneysville/disease\\_descriptions/omblight.html](http://www.caf.wvu.edu/kearneysville/disease_descriptions/omblight.html)

Or in the 2011 Spray Bulletin for Commercial Tree Fruit Growers available at:

<http://www.pubs.ext.vt.edu/456/456-419/456-419.html>



**Apple Fireblight CMREC Upper Marlboro**  
Photo by R. D. Myers

**Strawberry Plasticulture:** Harvest is in full swing. Continue to monitor nutrient status. Removal of over-ripe fruit will decrease problems with sap beetles. Earlier than usual runner formation has been reported around the state and further south. This can be caused by stress events on the plant such as unusual cold periods that may have injured the crown or more likely the warm spells we have had the past few weeks. These types of events can trigger mechanisms within the plant to cease flower bud initiation and begin vegetative runner production. Reports from NC State claim that it is not economically feasible to remove these runners at this time.

**High tunnels:** Blue berries are being harvested in our high tunnel with red raspberries close behind. Read how we did this at: <http://wrec.umd.edu>

Note: Go to recent program materials and then to 2011 Strawberry Twilight meeting, MDA Specialty Crop Grant. Strawberries in the high tunnels are finished just in time as the field berries are coming on strong.



## Vegetable Crop Insect Update

By Joanne Whalen  
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### Asparagus

Asparagus beetles adults can still be found laying eggs and feeding on spears. As a general guideline, a treatment is recommended if 2% of the spears are infested with eggs. Since adults also feed on the spears, a treatment is recommended if 5% of the plants are infested with adults.

### Cabbage

Continue to scout fields for imported cabbage worm and diamondback larvae. Larvae can be found and sprays will be needed before they move deep into the heads. As a general guideline, a treatment is recommended if you find 5% of the plants infested with larvae.

### Melons

Watch for aphids in the earliest transplanted fields. When sampling for aphids, be sure to watch for beneficial insects as well, since they can help to crash aphid populations. In past years, we have been asked about ants being found near melon transplants. In many cases, if ants are present you should look carefully on the undersides of leaves for melon aphids. Ants are commonly found associated with melon aphids in fields. They are often present in fields to collect honeydew from the aphids and can even hinder predation by other insects. As a general guideline, a treatment should be applied for aphids when 20% of the plants are infested, with 5 aphids per leaf. Foliar treatments labeled for melon aphid control on melons include Actara, Assail, Belay, Beleaf, Fulfill, Lannate and Thionex. These materials should be applied before aphid populations explode. The Fulfill label states that the addition of a penetrating type spray adjuvant is recommended to provide optimum coverage and penetration. Admire, Belay and Platinum are also labeled at planting for aphid control.

### Peas

Continue to sample fields for aphids. On small plants, you should sample for aphids by counting the number of aphids on 10 plants in 10 locations throughout a

field. On larger plants, take 10 sweeps in 10 locations. As a general guideline, a treatment is recommended if you find 5-10 aphids per plant or 50 or more aphids per sweep. When sampling dry land peas, you may want to reduce the threshold, especially if they are drought stressed. Be sure to check labels for application restrictions during bloom.

### Potatoes

As soon as plants emerge, be sure to sample fields for Colorado potato beetle adults, especially if an at-planting material was not used. Low levels of the first emerged adults can now be found. A treatment should not be needed for adults until you find 25 beetles per 50 plants and defoliation has reached the 10% level

### Sweet Corn

Be sure to scout emerged fields for cutworms and flea beetles. As a general guideline, treatments should be applied for cutworms if you find 3% cut plants or 10% leaf feeding. In order to get an accurate estimate of flea beetle populations, fields should be scouted mid-day when beetles are active. A treatment will be needed if 5% of the plants are infested with beetles. In fields that were planted under plastic, begin to scout for corn borers as soon as the plastic is removed.

## Nematode Pest Recently Found in New York Garlic Fields May Also Affect Maryland Growers

By Jerry Brust  
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There is a new 'old' pest infecting garlic and onions in New York and other New England states that has been found as far south as Pennsylvania. It is the garlic bloat nematode. The garlic bloat nematode *Ditylenchus dipsaci* is capable of severely damaging a field of garlic very quickly. It probably came from Canada in garlic that was imported for food, but was planted as seed garlic. The problem then spread through distributors because there is no certification program for seed garlic and it is now widespread throughout New York. Symptoms of bloat nematode in garlic plants include: bloated, twisted, swollen leaves, distorted and cracked bulbs with dark rings (fig.1). Infested tissues become spongy, distorted and predisposes the plant to other problems like fusarium or white rot (fig. 2). Garlic bloat nematodes can overwinter in soil or crop debris and can move to the inflorescence and remain in seeds for long periods of time in some plant species, i.e., beans, clover, and alfalfa, which act as major sources of nematode dispersal. The nematodes can be spread around fields by equipment or on clothing and shoes.

If a grower has purchased or brought in new planting material over the last few years, especially if it came from Ontario or New York, you may have this pest. If you have not made any new introductions in a while you are probably safe. If you have garlic bulbs that look something like they do in figure 1 or 2 you should send a sample to a nematode laboratory for testing.



**Fig. 1** The lack of roots on one side of plate and bulb deformation can be indicators of bloat nematode infection.

To prevent build-up of the nematode populations in a field, rotate away from any *Allium* crops (garlic, onions, and leeks) and control nightshades for at least 4 years. Another method to reduce levels of bloat nematodes in the soil is to keep the fields where garlic was grown moist, because bloat nematodes cannot survive for long periods in moist soils. They can persist for several years though, in dry soil and on dry plant residue. Bloat nematodes can actually survive better in dried crop debris than in soil.

Growers can use soil fumigants to reduce or eliminate the nematodes from infested areas of the field. Growers can also use bio-fumigant cover crops that can be planted after harvesting garlic. Mustard, sorghum-sudangrass have been shown to reduce nematode populations due to the bio-fumigant constituents they produce. Be sure to clean equipment and storage areas with meticulous sanitation techniques.



**Fig. 2** Non-infested garlic bulbs (left) and infested garlic bulbs (right) with bloat nematode



## Brown Marmorated Stink Bug on YouTube

Featuring Dr. Tracy Leskey  
Research Entomologist  
USDA-ARS

Appalachian Fruit Research Station

The Brown Marmorated Stink Bug (BMSB) is a new invasive pest that threatens to devastate US food and fiber production. The pest, imported from China just over a decade ago has now expanded its infestation to 32 states and is causing increasing damage to fruit and vegetable crops as well as crops like corn and soybeans. Research is urgently needed to find ways to control this dangerous new pest.

**YouTube Link:**

[A New Pest Threatens US Agriculture UPDATED](#)



*Edited Excerpts From:*

### Impact of Incidental Contact with Organic Insecticide Residues on Brown Marmorated Stink Bug, Mobility and Mortality

By Tracy C. Leskey  
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Appalachian Fruit Research Station

**Introduction:** The brown marmorated stink bug (BMSB), *Halymorpha halys* (Stål) is an invasive insect native to China, Taiwan, Korea, and Japan that was introduced to the United States in the Allentown, PA region in the mid-1990s. Currently, BMSB is well established throughout the mid-Atlantic region and has been officially detected in 33 states and the District of

Columbia. BMSB is a highly polyphagous pest, and threatens numerous agricultural crops; in 2010, BMSB populations increased dramatically and attacked many high-value crops in the mid-Atlantic region. Damage in commercial tree fruit orchards reached critical levels, with some growers losing entire blocks of stone fruit and Asian pears, and producers endured widespread injury to apples, peppers, tomatoes, raspberries, grapes, sweet corn, field corn, soybeans, and blueberries. As the spread, expansion, and threat to US agriculture posed by BMSB continues to increase, there are no established detection methods, treatment thresholds, or control strategies for BMSB in any cropping system, and relative lethality of labeled organic insecticides is not known for control of BMSB. In order to provide the foundation for determination of potential field effectiveness of organically approved materials against BMSB, we performed a series of laboratory trials to examine the impact of incidental contact with dry insecticide residues on BMSB mobility and survivorship.

**Materials and Methods:** *Subject BMSBs.* For all insecticide assays, wild BMSB adults were collected from overwintering sites in Jefferson and Berkeley Counties, WV and immediately brought back to the laboratory. Field-collected adults were then placed in 30 cm<sup>3</sup> screen cages for a minimum of two weeks at 16:8 (L:D), 25°C, and 70% RH. Each cage was provisioned with a potted soybean plant and peanuts, carrots, and/or sunflower seeds as food sources. Food was changed twice-weekly. Approximately 200 adults were held in each cage. Only those adults that began to actively forage and feed after the two-week holding period were used as test subjects in subsequent insecticide bioassays.

**Insecticide Formulation and Application:** Insecticides were mixed (with water alone as carrier) in accordance with the tree fruit-specific label recommendations, at a concentration equal to use of 100 gallons of finished spray material per acre. Finished sprays were atomized onto 100 mm x 15 mm glass Petri dish arenas at a volume equal to field delivery per unit area (505 microliters per arena). Insecticide residues were allowed to dry completely for 18 h in a fume hood prior to testing. Insecticides evaluated included azadirachtin, potassium salts, pyrethrins, pyrethrins + kaolin clay, and spinosad. Water alone was used as a control.

**Vertical Mobility:** The effect of pesticide exposure on the vertical mobility of adult BMSB was performed immediately after the 4.5-hour exposure period of horizontal mobility trials and seven days later. Adults were placed individually into 30 cm tall x 7 cm inner diameter clear polycarbonate vertical mobility bioassay cylinders. Subject BMSB were evaluated for 5 minutes in each of 3 separate but consecutive trials. Bug position was recorded at 30-second intervals, and

climbing arenas were inverted if bugs reached the top of the cylinder. Total upward distance moved was recorded.

Chemical Name	Vertical Mobility (cm ± SE)	
	4.5h	7d
Azadirachtin	143.7 ± 33.8	21.9 ± 16.9
Potassium Salts of Fatty Acids	2.8 ± 1.5	6.8 ± 4.3
Pyrethrins	11.7 ± 9.1	44.5 ± 26.0
Pyrethrins + Kaolin	2.4 ± 1.7	0.5 ± 0.3
Spinosad	148.1 ± 37.7	3.7 ± 2.5
Water	56.4 ± 20.5	7.2 ± 3.3

**Mortality:** After 4.5 hours of exposure in treated dishes and following vertical mobility trials, BMSB adults were placed in clean isolation cups with food and water resources. Individual bug condition (alive, affected, moribund, dead) was assessed immediately following the insecticide exposure period, then daily for five days.

Trade Name(s)	Lethality Index
Pyganic + Surround	62.6
Pyganic	46.0
M-Pede	38.1
Entrust	30.8
Water (control)	19.7
Neemix 4.5	19.0

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## Tomato Spotted Wilt Problems in High Tunnel/Greenhouse Tomatoes

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I recently visited a grower that grows both tomatoes and bedding plants. The plants are grown in a high tunnel-like setting, i.e., with heat. The grower was having problems in his tomato plants, but not in his bedding plants. The tomato plants looked like they had tomato spotted wilt virus (TSWV). The symptoms were found on most of his tomato plants, which would be unusual, as most of the time only an occasional plant here and there would be infected with the virus. The grower thought that is what he had as did an alert County Educator—and they were right. The grower

unfortunately had a perfect storm in his operations that produced high percentages of TSWV infection in his tomato crop, but not his bedding plants.

Tomato spotted wilt virus is an obligate parasite; it must have a living host and must be moved from one plant to another by thrips or through cuttings or possibly seed. TSWV is transmitted most efficiently by Western flower thrips (WFT) (*Frankliniella occidentalis*), and less so by Onion thrips (*Thrips tabaci*), Tobacco thrips (*Frankliniella fusca*) and a few other thrips species. It is not transmitted by Eastern flower thrips (*Frankliniella tritici*).

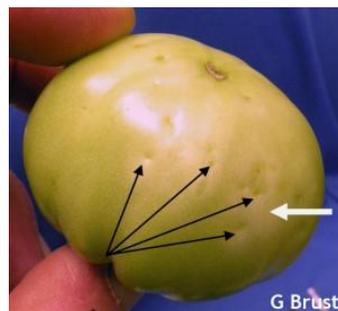
WFT completes its life cycle in about 10-18 days. Eggs are laid in the leaf or tomato fruit. When WFT oviposits into tomato fruit they often cause a deeper dimple (black arrows Fig. 1) than other thrips species and very often the dimple is surrounded by a halo of white tomato tissue (white arrow Fig 1). This is how I could tell the grower had WFT present at one time (when I visited I could find no live thrips) at fairly high levels by the oviposition marks on his tomatoes. Larvae hatch in about three days and immediately begin to feed and in so doing pick up the virus. After four days, they pupate in the soil, and in a little over three days, the pupae become adults. Only immature thrips can acquire the virus, which they can acquire within 15 minutes of feeding, but adults are just about the only stage able to transmit the virus. Adults can transmit the virus for weeks.

TSWV infected leaves may show small, dark-brown spots (Fig. 2) or streaks on stems and leaf petioles (we found one prickly lettuce weed with such a symptom). Growing tips are usually affected with systemic necrosis and potentially stunted growth. Tomato fruit will have mottled, light green or yellow rings usually with raised centers (Fig 3).

Weed hosts function as important virus reservoirs for TSWV and can survive in and around greenhouses or even high tunnels through the winter. Some of these weeds include prickly lettuce, chickweed, (Fig. 4) spiny amaranth, lambsquarters, black nightshade, shepherd's purse, galinsoga and burdock. This grower unfortunately had a good crop of prickly lettuce at one end of his high tunnel.

The grower had been able to control his thrips populations with spinosad, but western flower thrips are notorious for developing resistance and sure enough have developed resistance to this insecticide in many greenhouses. So populations of WFT increased and with the weeds that were around and in the high tunnel some of which tested positive for TSWV, but negative for INSV, it was a perfect scenario for an outbreak of TSWV. I should note here that we tested for both INSV and TSWV on the tomatoes, weeds and impatiens. Only TSWV was found in the tomato and the weeds. No INSV was found in any sample. Although both viruses are transmitted by the same thrips species these viruses tend to infect either bedding plants (INSV) or tomato/pepper plants (TSWV). The grower threw out all his infected tomato plants and is in the

process of killing his weeds in and around his high tunnel. He was able to get control of his thrips in his bedding plants using combinations of pylon and pyrethroids. One variety of tomato the grower was growing that did not show any symptoms of TSWV, even though it was right next to the other infected varieties was *Mountain Glory*.



**Fig 1 Tomato fruit with WFT oviposition marks**



**Fig. 2 Tomato leaves with TSWV symptoms and positive immunostrip (two black arrows; Agdia, Inc)**



**Fig. 3 Tomato fruit with TSWV symptoms**



**Fig. 4: Two common weed hosts of TSWV; prickly lettuce and chickweed**



## Storing Vegetable Seed

Gordon Johnson

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Vegetable growers and processors throughout the region have purchased seeds for this crop year. Many of the purchased spring seeds have already been planted in the ground or are growing in greenhouses. However, seed for successive plantings through the summer must be stored. Much harm can be done to seed viability through the storage period and germination can be greatly reduced.

Many smaller growers buy larger quantities than they can use in a season to get volume discounts and then save the seed for upcoming years. Again, how that seed is stored can greatly affect germination in coming years. The most detrimental storage condition for seeds is high temperature coupled with very high humidity (think Delmarva in the summer). Seeds that have picked up moisture from the air will lose viability quickly. For each 1% increase in seed moisture, seeds lose half of their storage life. For each 9° F increase in temperature, seeds lose half of their storage life.

Uninsulated metal buildings make poor summer storage whereas older wooden sheds and barns or concrete block buildings are better. Seeds also should be kept in the dark. Most seed packaging excludes light but opened seed bags or containers can be at greater risk.

The ideal would be a well insulated structure that is shaded and kept dark. Air conditioning and refrigeration may be a good answer in the short term, especially for smaller lots. As a general rule of thumb the combination of temperature with relative humidity in storage should be less than 100 (50°F + 50% RH, 40°F + 60 % RH, etc.) for seed storage. Be aware that the colder the storage, the higher the allowable humidity, the hotter the temperature, the lower the allowable humidity. However, for longer term storage, the temperature and relative humidity should be kept somewhat lower (40°F; 30 % RH for most seeds).

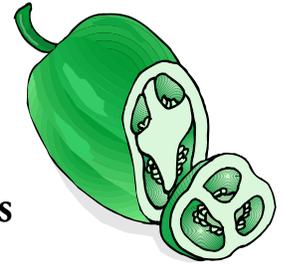
How about freezing seeds (for example, long-term germplasm collections are stored at 0°F)? Freezing will work very well if seeds are dry. If they have picked up significant moisture, they can be damaged in the freezing process. Also, freezing and thawing cycles can be damaging to seeds so remove seeds to be used and place the remainder back in the freezer quickly.

Vegetable seed that come in sealed containers or packaging should not be opened until just ready for use. Seeds in bags should also not be opened until being used. Open bags should be completely planted unless sealed and placed back in proper storage.

Vegetable seeds also vary by type in their ability to store for extended periods. For example, onion seed has less than one year storage potential and should be bought new each year. Sweet corn also stores poorly over one year, as does spinach. Beans and peas are intermediate with two year storage potential and

peppers are also in the two year range. Melon, cucumber, squash, and pumpkin seed, as well as cole crop seeds (cabbage, broccoli, cauliflower, kale, collards), tomatoes, and eggplants can be stored for three years.

## Pepper Phytophthora Blight Control Recommendations



Bob Mulrooney

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### For control of the crown rot phase of phytophthora blight in pepper:

Apply 1.0 pt Ridomil Gold 4SL/A or 1.0 qt Ultra Flourish 2E/A (mefenoxam, 4), or MetaStar (metalaxyl, 4) at 4.0 to 8.0 pt 2E/A. Apply broadcast prior to planting or in a 12- to 16-inch band over the row before or after transplanting. **Make two additional post planting** directed applications with 1 pint Ridomil Gold SL or 1 qt Ultra Flourish 2E per acre to 6 to 10 inches of soil on either side of the plants at 30-day intervals. Use formula titled "Calibration for Changing from Broadcast to Band Application" from Calibrating Granular Application Equipment in [Section E of the Delaware Commercial Vegetable Production Recommendations](#) to determine the amount of Ridomil Gold needed per acre when band applications are made. When using polyethylene mulch, apply Ridomil Gold 4SL at the above rates and timing by injection through the trickle irrigation system. Dilute Ridomil Gold 4SL prior to injecting to prevent damage to injector pump. Do not use mefenoxam or metalaxyl if insensitive strains of *Phytophthora capsici* are present.



## Fungicide Recommendations for Strawberry Disease Control

Bob Mulrooney

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### Anthracnose Fruit Rot

Strawberry anthracnose can be extremely destructive during warm, wet weather causing significant fruit rot. Symptoms of anthracnose include blackish-brown circular spots on maturing green fruit and soft, sunken (flat) circular lesions on ripe fruit. On ripe fruit, lesions can expand rapidly and are often covered with a pinkish-orange spore mass. Spores are

spread from infected to healthy fruit with splashing water. Control of anthracnose always begins with a 7 to 10-day preventative spray program no later than 10% bloom and/or prior to disease development. For control apply the following combinations:

**Application #1:**

captan (M3) at 4.0 lb 50WP/A *plus* Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23.0 oz 38WG/A

**Application #2:**

captan (M3) at 4.0 lb 50WP/A *plus* Abound (azoxystrobin, 11) at 6.0 to 15.5 fl. oz 2.08SC/A

*or*

Cabrio (pyraclostrobin, 11) at 12.0 to 14.0 oz 20EG/A

**Application #3:**

Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

**For subsequent applications, alternate:**

captan (M3) at 4.0 lb 50WP/A *plus* Abound (azoxystrobin, 11) at 6.0 to 15.5 fl oz 2.08SC/A

*or*

Cabrio (pyraclostrobin, 11) at 12.0 to 14.0 oz 20EG/A *plus*

captan (M3) at 4.0 lb 50WP/A

*or*

Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

**To help manage fungicide resistance development, do not make more than 2 consecutive applications of either:**

Pristine (pyraclostrobin + boscalid, 11 + 7), Cabrio (pyraclostrobin, 11) or Abound (azoxystrobin, 11) before switching to another fungicide chemistry.

**Botrytis**

Botrytis (gray mold) and blossom blight can cause serious losses in strawberry plantings in high tunnels and the field if not controlled properly. Development is favored by moderate temperatures (59 to 77°F) with prolonged periods of high relative humidity and surface wetness. Control of gray mold begins with preventative fungicide applications. Apply at 5 to 10% bloom and every 10 days until harvest. During periods of excessive moisture, spray intervals of 5 to 7 days may be necessary. Rotate fungicide chemistries to aid fungicide resistance management.

**Application #1:**

captan (M3) at 4.0 lb 50WP/A *plus* Topsin M (thiophanate-methyl, 1) at 1.0 lb 70WP/A

*or*

Switch (cyprodinil, 9) at 11.0 to 14.0 oz. 62.5WG/A

**Application #2:**

Elevate (fenhexamid, 17 – See restrictions) at 1.1 to 1.5 lb 50WDG/A

*or*

Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23.0 oz. 38WG/A

**Application #3:**

captan (M3) at 4.0 lb 50WP/A *plus* Topsin M (thiophanate-methyl, 1) at 1.0 lb 70WP

*or*

Switch (cyprodinil, 9) at 11.0 to 14.0 oz. 62.5WG/A

**For subsequent applications, alternate:**

captan (M3) at 4.0 lb 50WP/A

*or*

Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

*or*

Switch (cyprodinil, 9) at 11.0 to 14.0 oz. 62.5WG/A.

**From Rutgers Plant and Pest Advisory, Veg Crops Edition, by Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology and Wesley Kline, Ph.D., Cumberland County Agricultural Agent**

GROUP	43	FUNGICIDE
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FOR CONTROL AND/OR SUPPRESSION OF CERTAIN DISEASES IN BRASSICA (HEAD AND STEM), BULB VEGETABLES, CUCURBIT VEGETABLES, FRUITING VEGETABLES, GRAPES, LEAFY VEGETABLES (EXCEPT BRASSICA VEGETABLES), SWEET POTATOES AND ROOT VEGETABLES (EXCEPT CARROT, POTATO AND SUGAR BEET).

Active Ingredient .....	By Wt.
* Fluopicolide .....	39.5%
Other Ingredients .....	60.5%
Total .....	100.0%

\* 2,6-dichloro-N-[[3-chloro-5-(trifluoromethyl)-2-pyridinyl]methyl]benzamide

## Label Additions for Presidio

Bob Mulrooney

DE Extension Plant Pathologist

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Valent USA just reported that brassica leafy vegetables, root and tuber vegetables, potatoes and carrots have been added to the Presidio label. The other good news is that the rotation interval for wheat has been reduced from 18 months to 30 days.

Hopefully this will be the beginning of the reduction of the other rotational intervals for other crops that follow cucurbits that have limited its use for downy mildew control in pickling cucumbers particularly. The supplemental label is available online here:

<http://agdev.anr.udel.edu/weeklycropupdate/wp-content/uploads/2011/05/PresidioSupplementalLabel.pdf>

Presidio is an excellent fungicide for cucurbit downy mildew control and will be another excellent fungicide for control of late blight and pink rot on white potatoes.

# Watermelon Bacterial Fruit Blotch Continued...

By Kate Everts  
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As of Thursday, May 5, no Bacterial Fruit Blotch (BFB) had been confirmed in Delaware or Maryland. Please continue to monitor both locally grown transplants and transplants purchased from other areas, because [BFB has been reported in Georgia](#).

Management of BFB in greenhouse plant production includes the following steps: **1)** Use seed that has been tested for *Acidovorax avenae* subsp. *citrulli*, **2)** Monitor plants for BFB symptoms, **3)** If potential symptoms are observed, submit plants for diagnosis.

If BFB is confirmed in a greenhouse, the symptomatic transplants and those in a 15-foot radius should be destroyed. Additional trays that are 15 to 20 feet from the infected plants should be removed and isolated in a warm humid location and observed closely for five days for symptom development. If symptoms develop, then the epidemic has not been contained and additional plants should be destroyed.

If, despite best practices, BFB is observed in a field following setting out transplants, BFB will continue to spread. The rate of spread depends on the environment and irrigation practices. Spread will be fastest in fields irrigated with a travelling gun, intermediate where center pivot irrigation is used, and slowest with drip irrigation. Likewise, spread will occur within a field during rainfall, especially during "driving" rains. Spread of BFB from field to field in air is not common (though the bacterium could move in an aerosol). However, spread from field to field will occur on tractors or truck tires, cultivation equipment, peoples' hands and shoes, and other direct contact.



**Olive green water-soaked lesion on watermelon fruit.**  
Photo by D. B. Langston.

The best spray practices to minimize BFB spread in the field are to use copper and Actigard. Copper fungicide should be applied weekly beginning before flowering until after fruit set (approximately the first five sprays). Another option is to include a copper fungicide in the first, third and fifth fungicide application and include Actigard or Actigard plus copper in the second and fourth fungicide application.

These programs have provided suppression (but not elimination) of BFB. Additional labor at harvest may be necessary to separate symptomatic fruit from symptomless fruit.

## Nutrient Management Continuing Education

By Heather Hutchinson  
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[hhutchin@umd.edu](mailto:hhutchin@umd.edu)

Certified Farm Operators (CFOs) are required to obtain continuing education units (CEUs) to maintain certification. Two (2) CEUs are required during the initial year of certification. After this initial year, certification is administered on a three-year basis. Six (6) CEUs are needed every 3 years to maintain certification.

Remember, if you attend a meeting such as a commodity group or grower meeting that includes topics on soil fertility, crop nutrient requirements, or water quality, those meetings may qualify for continuing education credits.

To receive credits for a meeting that was not sponsored by MDA, mail or fax a copy of the agenda to the attention of Jo Mercer, Training Coordinator, MDA, 50 Harry S Truman Parkway, Annapolis, MD 21401. Fax 410-841-5950. The Training Coordinator will assign credits based on the time devoted to the topic.

## New Asynchronous Webinars Approved for Maryland Nutrient Management Continuing Education

**NOTE: Print out the quiz before you start watching the program so you can follow along. All your answers must be correct to earn CEUs. Submit your completed quiz to MDA right away. Programs may be delisted at any time and quizzes submitted after that will not be accepted for credit.**

### NUTRIENT APPLICATOR VOUCHER ONLY

[University of Maryland Extension](#)

#### Nutrient Applicator Voucher Renewal

April 1, 2011  
MDA-NMP course #1254  
2 CEUs voucher only

[Get Quiz](#)

Go to Webinar <https://connect.moo.umd.edu/p93838976>

#### Soil 101

January 12, 2011  
MDA-NMP course #1271  
1 CEU voucher only

[Get Quiz](#)

Go to Webinar <https://connect.moo.umd.edu/p55181849/>

**CERTIFIED CONSULTANT, CERTIFIED FARMER,  
AND NM APPLICATOR VOUCHER**

[University of Maryland Extension](#)

**Winter NM Webinar I**

**January 19, 2011**

MDA-NMP course # 1253

2 CEUs all categories

[Get Quiz Parts One and Two](#)

*Part One: TMDLs for the Chesapeake Bay*

Go to Webinar Part One <https://connect.moo.umd.edu/p80059069/>

*Part Two: Lime Requirements*

Go to Webinar Part Two <https://connect.moo.umd.edu/p97511815/>

**Winter NM Webinar II**

**March 16, 2011**

MDA-NMP course # 1246

2 CEUs all categories

*Nitrogen Management & Fall Nitrate on Wheat*

[Get Quiz](#)

Go to Webinar <https://connect.moo.umd.edu/p17425136/>

**Manure Application in No-Till**

**September 17, 2010**

MDA-NMP course # 1263

1 CEU all categories

[Get Quiz](#)

Go to Webinar <http://www.extension.org/pages/29975/manure-application-in-no-till>

**Utilizing Liquid Livestock Manure as a Top-dress to Wheat  
and Side-dress to Corn**

**January 21, 2011**

MDA-NMP course # 1247

1 CEU all categories

[Get Quiz](#)

Go to Webinar <http://www.extension.org/pages/32715/utilizing-liquid-livestock-manure-as-a-top-dress-to-wheat-and-side-dress-to-corn>

**Changing Management of Nutrients in the Chesapeake Bay  
Watershed**

**February 18, 2011**

MDA-NMP course # 1252

1 CEU all categories

[Get Quiz](#)

Go to Webinar <http://www.extension.org/pages/33173/changing-management-of-nutrients-in-the-chesapeake-bay-watershed>

**The Soil Health Paradigm**

**March 25, 2011**

MDA-NMP course # 1257

1 CEU all categories

[Get Quiz](#)

Go to Webinar <http://www.extension.org/pages/54525/the-soil-health-paradigm-holistic-manure-management>  
[Penn State Agriculture and Environment Center](#)

**BMPs and Environmental Stewardship on Equine Operations**

**April 29, 2010**

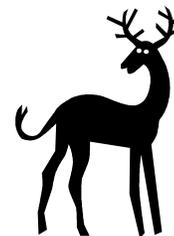
MDA-NMP course # 1264

1 CEU all categories

[Get Quiz](#)

Go to Webinar <https://breeze.psu.edu/p75043846/>

**SUBURBAN DEER  
MANAGEMENT  
WORKSHOP:  
Options & Choices for  
Decision-Makers**



Local government officials, state legislators, land managers, park managers, police, homeowner associations, non-profit organizations, private property owners, business owners and other decision-makers are invited to attend the workshop, **Suburban Deer Management: Options and Choices for Decision-Makers on May 26, 2011 at the Elks Club in Bowie, MD from 8:30 a.m. to 3:30 p.m.** The workshop is being offered by the University of Maryland Extension in partnership with the Maryland Department of Natural Resources.

Deer contribute greatly to our quality of life; however, they have become overabundant in suburban and urban areas, creating major challenges to local decision-makers on how to deal with citizens and their differing views on the issue. On one hand, there are serious safety issues to deal with such as Lyme disease and deer-vehicle collisions. Deer also cause extensive damage to residential landscapes, crops, and natural forests. Some think that populations must be reduced through lethal options and others think that only non-lethal means should be used, such as fencing, repellents, and managing vegetation. Some want a combination of the two.

The workshop is specifically designed for local decision-makers and managers to provide an opportunity to learn from case studies and current research what methods have been used, their effectiveness, and more importantly, how to implement a community-based deer management program in their area. The atmosphere will provide a comfortable learning environment where you can ask hard questions and learn from real life applications. Rather than be reactive, what you learn at this workshop will allow you to work proactively in your locale and, hopefully, avoid the pitfalls. Case studies of successful programs are showcased and the most up-to-date reference materials provided.

More information about registering for the program is available at [www.naturalresources.umd.edu](http://www.naturalresources.umd.edu) or by contacting Pam Thomas at the University of Maryland Western Maryland Research & Education Center at: 301-432-2767 ext 315 or by email at: [pthomas@umd.edu](mailto:pthomas@umd.edu)

The registration cost is \$25 per person which includes lunch and materials. **Registration deadline extended to Friday, May 20.**

# Future Harvest CASA Field Days

**Saturday, May 14 - 10 am - 4 pm**  
**(Registration at 9:30 am)**

**Reviving a 3rd Generation Eastern Shore Farm**

Greenbranch Farm, Salisbury, MD

All registrants: \$10 for individuals; \$15 for families

In the past five years, Ted and Julia Wycall have built Greenbranch Farm into a diversified organic operation serving a CSA of over 300 members, farmers' markets, an on-farm retail store, and restaurants, completely transforming the farm where Ted's family had grown commodity crops for two previous generations. In addition to a walking tour and description of farm operations, this field day will include a roundtable discussion on responding to the local food movement, led by Matt Heim of LESSON, with other direct-market farmers from the area. *Field Day presented by Future Harvest - Chesapeake Alliance for Sustainable Agriculture in partnership with University of Maryland Eastern Shore (UMES) and Lower Eastern Shore Sustainable Organic Network (LESSON).*

**Wednesday, June 1 - 3 - 6 pm**

**Increase Your Farmers Market Revenue With WIC FMNP and FVC**

Crossroads Farmers Market, Takoma Park, MD

No charge, but **registration is required.**

If you're a vendor at Maryland farmers markets, you can expand your customer base and increase your revenue by accepting cash value vouchers from clients of the Women, Infants and Children (WIC) nutrition assistance program. This field day will demystify these programs and equip you to tap into the more than \$11 million in benefits distributed year-round through Fruit and Vegetable Checks (FVC) and the more than \$300,000 in benefits distributed seasonally through the Farmers Market Nutrition Program (FMNP). Tour the market to see these programs in action, then attend a training session conducted by MDA that will certify you to accept both WIC FMNP and FVC. *Field Day presented by Future Harvest - Chesapeake Alliance for Sustainable Agriculture in partnership with Crossroads Farmers Market and Maryland Department of Agriculture.*

Visit [www.futureharvestcasa.org](http://www.futureharvestcasa.org) to register for these and other Future Harvest CASA Field Days.

For more information contact:

Renee Brooks Catacalos [renee@futureharvestcasa.org](mailto:renee@futureharvestcasa.org)

## *Vegetable & Fruit Headline News*

A bi-weekly publication for the commercial vegetable and fruit industry available electronically in 2011 from April through September on the following dates: April 14 & 28; May 12 & 26; June 9 & 30; July 14 & 28; August 18; September 8

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**Article submission deadlines for 2011:** April 13 & 27;

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May 11 & 25; June 8 & 29; July 13 & 27; August 17; September 7.