

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.

Volume 2 Issue 9 August 18, 2011

## Vegetable Crop Insect Update

By Joanne Whalen  
DE Extension IPM Specialist  
[jwhalen@udel.edu](mailto:jwhalen@udel.edu)



**NOTE** - It is the time of year when we see significant increases in trap catches so be sure to check trap catches in your area. You can get updates by calling the Crop Pest Hotline in DE: 1-800-345-7544; out of state: 302-831-8851 or checking our website at: <http://ag.udel.edu/extension/IPM/traps/latestblt.html>  
Both media are updated on Tuesday and Friday each week.

**Cole Crops** - Continue to sample for cabbage looper, diamondback larvae, armyworms and Harlequin bug. Although the pyrethroids will provide control of Harlequin bugs they are not effective on diamondback. So be sure to scout and select controls options based on the complex of insects present in the field.

**Lima Beans** - Continue to scout for spider mites, stink bugs and lygus bugs. Be sure to sample for corn earworm larvae as soon as pin pods are present. A treatment will be needed if you find one corn earworm larvae per 6 ft-of-row. With the increase in local corn earworm catches we are starting to see an increase in larval populations.

**Melons** - Continue to scout all melons for aphids, cucumber beetles, and spider mites. We continue to see an increase in aphid populations. Treatments should be applied before populations explode and leaf curling occurs.

**Peppers** - In areas where corn borers are being caught in local traps, fields should be sprayed on a 7-day schedule for corn borer control. As soon as corn borer trap catches increase to above 10 per night, a 5 to 7-day schedule may be needed. Since trap catches can increase quickly at this time of year, be sure to check local moth catches in your area by calling the Crop Pest Hotline in DE: 1-800-345-7544; out of state: 302-831-8851 or visiting our website at: <http://ag.udel.edu/extension/IPM/traps/latestblt.html>

We continue to find beet armyworms (BAW) so be sure to watch for feeding signs and apply treatments before significant webbing occurs. We continue to find aphids in fields and populations can explode quickly, especially where beneficial insect activity is low. As a general guideline, treatment may be needed if you find one or more aphids per leaf and beneficial activity is low.

**Snap Beans** - At this time of year, you will need to consider a treatment for both corn borer and corn earworms. Sprays are needed at the bud and pin stages on processing beans for corn borer control. An earworm spray will also be needed at the pin stage. Just as a reminder, Orthene (acephate) will not provide effective corn earworm control in processing snap beans. If Orthene is used for corn borer control you will need to combine it with a material that is effective on corn earworm. You will need to check our website for the most recent trap catches to help decide on the spray interval between the pin stage and harvest for processing snap beans at: <http://ag.udel.edu/extension/IPM/traps/latestblt.html> & <http://ag.udel.edu/extension/IPM/thresh/snapbeanecbthresh.html>

Once pins are present on fresh market snap beans, a 7-day schedule should be maintained for corn borer and corn earworm control.

**Sweet Corn** - The first silk sprays will be needed as soon as ear shanks are visible. Be sure to check both blacklight and pheromone trap catches for silk spray schedules 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> & <http://ag.udel.edu/extension/IPM/thresh/silkspraythresh.html>

You can also call the Crop Pest Hotline in DE: 1-800-345-7544; out of state at: 302-831-8851.

A whorl stage treatment should be considered for fall armyworm when 12-15% of the plants are infested. We continue to find pockets of high fall armyworm infestations. Since fall armyworm feed deep in the whorls, sprays should be directed into the whorls and multiple applications are often needed to achieve control. Be sure to check all labels for days to harvest and maximum amount allowed per acre.

# Update on Brown Marmorated Stink Bug on Tree Fruit

By Joanne Whalen  
DE Extension IPM Specialist  
[jwhalen@udel.edu](mailto:jwhalen@udel.edu)

Please refer to the most recent update from Tracy Leskey, USDA-ARS regarding BMSB activity in tree fruit at:  
<http://agdev.anr.udel.edu/weeklycropupdate/wp-content/uploads/2011/08/BMSB-Tree-Fruit-Update-8-8-11-2.pdf>



The photo above, courtesy of Gordon Johnson, is of BMSB damage to peach fruit.

## Cucurbit Downy Mildew Alert

Bob Mulrooney  
DE Extension Plant Pathologist  
[bobmul@udel.edu](mailto:bobmul@udel.edu)

**August 15, 2011**

Downy mildew has been confirmed now on pumpkins in North Jersey. Cucurbit growers should be adding one of the downy mildew specific fungicides in their spray programs now. The obvious weather change will favor infection and spread. See the Vegetable Productions Recs for fungicide choices. All cucurbits are considered to be at risk especially pickling cucumbers. I have not seen downy in our sentinel plots except for cucumber and recently cantaloupe. Continue to check the IPM pipe website for more information on the spread of downy mildew: <http://cdm.ipmpipe.org>.

## Downy Mildew Control for Pumpkins & Winter Squash (Excerpt from EB 236)

Scout fields for disease incidence early in the growing season. Begin sprays when vines run or if downy mildew is predicted for the region. For current status of the disease, refer to the Cucurbit Downy Mildew forecasting website <http://cdm.ipmpipe.org/>. **Preventative applications are much more effective than applications made after disease is detected.**

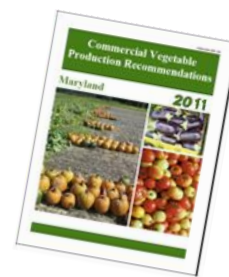
The following are the most effective materials:  
Tank-mix one of the following products with a protectant such as chlorothalonil--1.5-3 pt 6F/A and alternate between different modes of action (FRAC codes):

Presidio--3.0-4.0 fl oz 4SC/A, or  
Ranman--2.1-2.75 fl. oz 400 SC/A *plus* an organosilicone or  
non-ionic surfactant, see label for details, do not apply with copper, or  
Previcur Flex--1.2 pt 6F/A,  
Other materials for use in tank mix or alternation:  
Tanos--8.0 oz 50WDG/A ,or  
Curzate--3.2 oz 60DF/A

Materials with different modes of action (FRAC codes) should always be alternated to reduce the chances for fungicide resistance development.

Sprays should be applied on a 7-day schedule. Under severe disease conditions spray interval may be reduced if label allows.

## Commercial Vegetable Production Recommendations Maryland EB 236 On-Line at:



<http://mdvegetables.umd.edu/files/2011%20COMPLETE%20MARYLAND%20BOOK%20.pdf>

Also available in a new very interactive format at the Delaware Extension site at:

<http://ag.udel.edu/extension/vegprogram/publications.htm#vegrecs>

## The Deadline to Remove Tolerance of Maneb Extended Until December 21, 2012

Bob Mulrooney  
DE Extension Plant Pathologist  
[bobmul@udel.edu](mailto:bobmul@udel.edu)  
via Gene MacAvoy, University of Florida

The U.S. Environmental Protection Agency has taken into consideration written comments submitted by FFVA and others and agreed to delay the expiration of tolerances for the fungicide product maneb. Among its comments, FFVA reminded EPA that existing stocks of maneb may remain in growers' inventories and that a premature revocation of tolerances could generate complications such as disposal obstacles if all components were not carefully considered

before a final decision. Therefore, to allow sufficient time for existing stocks that may remain in the channels of trade to be used and subsequent marketing of affected commodities, tolerances for maneb on food uses such as succulent beans, broccoli, cabbage, cauliflower, celery, collards, sweet corn, cucumbers, eggplant, endive, kale, lettuce, melons, mustard greens, papaya, peppers, potatoes, squash, tomatoes and turnips, will now not expire until Dec. 31, 2012.

## Gavel 75DF from Gowan Company LLC Now Labeled for Pumpkin and Winter Squash

Bob Mulrooney  
DE Extension Plant Pathologist  
[bobmul@udel.edu](mailto:bobmul@udel.edu)

Gavel has been labeled for use on pumpkin and winter squash for the control of *Alternaria* leaf spot, *Cercospora* leaf spot, downy mildew and *Phytophthora* fruit and stem rot.

This is in addition to labels for use on cucumber, cantaloupe, summer squash and watermelon. Gavel is not recommended for downy mildew control on cucumbers but is recommended for control on pumpkin and winter squash as well as watermelon and cantaloupe. Remember that Gavel contains mancozeb, so some cantaloupe varieties might be sensitive. Go to <http://www.cdms.net/LDat/ld4PP006.pdf> to see updated label.



Crimson Clover Cover CMREC, Upper Marlboro.  
Photo R. D. Myers

## Cover Crops for Vegetable Rotations Revisited

Gordon Johnson  
DE Extension Vegetable & Fruit Specialist  
[gjohn@udel.edu](mailto:gjohn@udel.edu)

August is here and it is time to consider late summer and fall cover crop options for vegetable rotations. Cover crop planting windows vary with crop and timely planting is essential to achieve the desired results. Here are some reasons to consider using cover crops in vegetable rotations:

### • **Return organic matter to the soil.**

Vegetable rotations are tillage intensive and organic matter is oxidized at a high rate. Cover crops help to maintain organic matter levels in the soil, a critical component of soil health and productivity.

### • **Provide winter cover.**

By having a crop (including roots) growing on a field in the winter you recycle plant nutrients (especially nitrogen), reduce leaching losses of nitrogen, reduce erosion by wind and water, and reduce surface compaction and the effects of heavy rainfall on bare soils. Cover crops also compete with winter annual weeds and can help reduce weed pressure in the spring.

### • **Reduce certain diseases and other pests.**

Cover crops help to maintain soil organic matter. Residue from cover crops can help increase the diversity of soil organisms and reduce soil borne disease pressure. Some cover crops may also help to suppress certain soil borne pests, such as nematodes, by releasing compounds that affect these pests upon decomposition.

### • **Provide nitrogen for the following crop.**

Leguminous cover crops, such as hairy vetch or crimson clover, can provide significant amounts of nitrogen, especially for late spring planted vegetables.

### • **Improve soil physical properties.**

Cover crops help to maintain or improve soil physical properties and reduce compaction. Roots of cover crops and incorporated cover crop residue will help improve drainage, water holding capacity, aeration, and tillage.

There are many cover crop options for late summer or fall planting, including:

#### **Small Grains**

Rye is often used as a winter cover as it is very cold hardy and deep rooted. It has the added advantage of being tall and strips can be left the following spring to provide windbreaks in crops such as watermelons. Rye makes very good surface mulch for roll-kill or plant through no-till systems for crops such as pumpkins. It also can be planted later (up to early November) and still provide adequate winter cover. Wheat, barley, and triticale are also planted as winter cover crops by vegetable producers.

Spring oats may also be used as a cover crop and can produce significant growth if planted in late August or early September. It has the advantage of winter killing in most years, thus making it easier to manage for early spring crops such as peas or cabbage. All the small grain cover crops will make more cover with some nitrogen application or the use of manure.

To get full advantage of small grain cover crops, use full seeding rates and plant early enough to get some fall tillering. Drilling is preferred to broadcast or aerial seeding.

#### **Ryegrasses**

Both perennial and annual ryegrasses also make good winter cover crops. They are quick growing in the fall and can be planted from late August through October. If allowed to grow in the spring, ryegrasses can add significant organic matter to the soil when turned under, but avoid letting them go to seed.

## Winter Annual Legumes

Hairy vetch, crimson clover, field peas, subterranean clover, and other clovers are excellent cover crops and can provide significant nitrogen for vegetable crops that follow. Hairy vetch works very well in no-till vegetable systems where it is allowed to go up to flowering and then is killed by herbicides or with a roller-crimper. It is a common system for planting pumpkins in the region but also works well for late plantings of other vine crops, tomatoes and peppers. Hairy vetch, crimson clover and subterranean clover can provide from 80 to well over 100 pounds of nitrogen equivalent. Remember to inoculate the seeds of these crops with the proper Rhizobial inoculants for that particular legume. All of these legume species should be planted as early as possible – from the last week in August through the end of September to get adequate fall growth. These crops need to be established at least 4 weeks before a killing frost.

## Brassica Species

There has been an increase in interest in the use of certain Brassica species as cover crops for vegetable rotations.

Rapeseed has been used as a winter cover and has shown some promise in reducing levels of certain nematode in the soil. To take advantage of the biofumigation properties of rapeseed you plant the crop in late summer, allow the plant to develop until early next spring and then till it under before it goes to seed. It is the leaves that break down to release the fumigant-like chemical. Mow rapeseed using a flail mower and plow down the residue immediately. Never mow down more area than can be plowed under within two hours. Note: Mowing injures the plants and initiates a process releasing nematicidal chemicals into the soil. Failure to incorporate mowed plant material into the soil quickly, allows much of these available toxicants to escape by volatilization.

Turnips and mustards can be used for fall cover but not all varieties and species will winter over into the spring. Several mustard species have biofumigation potential and a succession rotation of an August planting of biofumigant mustards that are tilled under in October followed by small grain can significantly reduce diseases for spring planted vegetables that follow.

More recent research in the region has been with forage radish. It produces a giant tap root that acts like a bio-drill, opening up channels in the soil and reducing compaction. When planted in late summer, it will produce a large amount of growth and will smother any winter annual weeds. It will then winter kill leaving a very mellow, weed-free seedbed. It is an ideal cover crop for systems with early spring planted vegetables such as peas.

Oilseed radish is similar to forage radish but has a less significant root. It also winter kills. Brassicas must be planted early – mid-August through mid-September – for best effect.

## Mixtures

Mixtures of rye with winter legume cover crops (such as hairy vetch) have been successful and offer the advantage, in no-till systems, of having a more rapidly decomposing material with the longer residual rye as a mulch.



## Mustard Seed Meal as a Chemical Fumigation Alternative

Gordon Johnson

DE Extension Vegetable & Fruit Specialist  
[gjohn@udel.edu](mailto:gjohn@udel.edu)

With September strawberry planting season approaching for the annual plasticulture system, growers will be preparing beds and fumigating in the next 2 weeks. While several chemical fumigants are registered for strawberries, new fumigant use restrictions will make their use more of a challenge. In addition, strawberry growers that are organic or are using high tunnels with limited rotation are looking for effective fumigation alternatives.

One natural fumigant alternative that has shown great promise is mustard seed meal. According to researchers Dean Kopsell and Carl E. Sams, "studies conducted at The University of Tennessee showed that mustard seed meal has extremely high concentrations of isothiocyanates (ITCs). The seed meal is also a fertilizer source of nitrogen and other nutrients. When incorporated into the soil, ITCs act as effective biofumigants, reducing populations of pathogenic fungal species (*Sclerotium*, *Rhizoctonia*, *Phytophthora*, and *Pythium*), nematodes, weeds, and certain insect species." ITCs are the same compounds found in some commercial chemical fumigants.

Specific studies with strawberries showed yield increases of as much as 50% compared to untreated controls using mustard seed meal. Additional research is going on in the region (Virginia, Maryland, Delaware, and Pennsylvania) with this material.

For mustard seed meal to be effective as a fumigant it has to be thoroughly worked into the bed area and plastic laid immediately after incorporation. The bed must remain evenly moist so the meal can break down (dry pockets will have delayed break down and can cause problems later) so a moist soil is important. A waiting period of 20 days is advised similar to a commercial fumigant before planting. Current supplies of mustard seed meal come from Tennessee and costs \$1.00-1.20 per pound. Recommended rate is 1000 lbs per mulched acre.

Because mustard seed meal is a natural compound, fumigant restrictions do not apply. It is also OMRI certified for organic production.



## The Year from Where for Berry Crops

Kathy Demchak, Penn State  
Horticulture  
[kdemchak@psu.edu](mailto:kdemchak@psu.edu)

I don't know what location you're thinking, but I was thinking Florida or Arkansas, or some other point South (maybe). It sure doesn't feel like Pennsylvania. The growing season started out with us having our last frost in central PA in March (really!!!). That was followed by cool temperatures and constant rain which gave diseases a leg up, and then scorching temperatures and a rain-free month to make sure the insects could multiply at breakneck speed, all while the plants just sat there and accumulated symptoms. Here are a few of the newer problems we're seeing this month:

**Brown marmorated stink bug feeding injury** - mostly on blackberries in the southeastern part of the state. You can go chase the adults around the field with your sprayer (hopefully not while screaming), or try to give the nymphs a direct hit since they can't fly.

On the bright side, if you've already been plastering everything on your farm trying to get them, you may not have the next two problems.

**Spotted wing drosophila.** Enough on that – just go read the articles on SWD in this issue if you haven't already, and don't look in your berries when you eat them, just in case.

**Thrips injury on blueberries.** Speaking of crawly things, we had thrips crawling around in strawberries and raspberries in various locations earlier this year, which wasn't terribly unusual. However, a new symptom on blueberries is one that's previously been reported in Florida and North Carolina. Apparently thrips eggs can be laid in the fruit when it's young. Then the thrips emerge from the fruit and the tissue scars over. That causes tiny raised mostly red bumps of tissue on green to ripe fruit, sometimes clustered near the blossom end but not always. It's too late to do anything about that for this year, but there's always next....

**Drought and heat stress on blueberries.** If parts of leaves turn brown during hot dry spells, either in spots or around the edges, it may just be heat injury or drought stress. We're seeing a lot of scorching on blueberry leaves prompting many to think they have a new disease, but chances are that if the symptoms just showed up in the last few weeks, it isn't a disease but instead is high temperatures or drought stress.

**Sunscald on raspberries and blackberries.** If the drupelets are filled out but are white instead of red or yellow, this is sunscald, which can be caused by high temperatures and/or lots of sun.

This year certainly has presented its share of challenge. I hope you all are weathering the storm so to speak...

## Yellow Shoulders in Tomato a Big Problem This Season

By Jerry Brust  
IPM Vegetable Specialist, UME  
[jbrust@umd.edu](mailto:jbrust@umd.edu)

A very wide spread problem this year in tomatoes, especially some of the large-sized fruit, is yellow shoulders. Yellow shoulders is characterized by areas at the top of the fruit (shoulders of fruit) that stay green or yellow and as the fruit ripens tend to turn a more intense yellow. These areas will never ripen properly. The area beneath the yellow shoulders is firm and poor tasting. Unfortunately the cause of this problem is complex involving the environment and plant physiology and there is no cure, but there are things that can be done to ease the symptoms. One of the main causes is one we have had lots of and one we can't do much about and that is intense heat (this past July was the hottest month on record for our area). High temperatures prevent lycopene production (red pigment of the tomato fruit) most often in the shoulders of tomato, as this part is more commonly exposed to the direct rays of the sun. We measured fruit (pulp) temperatures of between 86° and 105°F morning through evening hours in July. When temperatures are greater than 85-88°F lycopene is not produced. Temperatures need to drop below 85°F before it is consistently produced.



Various forms of yellow shoulders on red tomato fruit. By J Brust.

Inside the plant we see a reduction in potassium (K) just before yellow shoulders is seen. This year in our tissue testing we saw drops in K of 3-4% in a matter of weeks going from 4-6% (which is good) to 2-3% (which is poor). Usually within a week or two of this drop we see yellow shoulders start up. There are also drops in calcium (Ca), nitrogen and at times magnesium (Mg) as we move into mid-July and early August. All this is related to stress on a plant that has a full fruit load and the stress could be too little water, too much heat (most common), or high amounts of plant disease or insect problems. We see the same problems in high tunnels; only we see them a month earlier

than in the field. For now, best recommendations are to add more potassium and calcium to plants and make sure plants are well watered. You can add either nutrient through the drip or as foliar sprays. Foliar sprays will help, but it is difficult to raise the potassium levels 2-4% points as would be needed. I have found that boron also plays a role in helping with the uptake of K, Ca, sulfur and Mg, but all the data are not in at this time to make a recommendation.

Yellow shoulders is also a varietal problem, as some varieties are more prone to the problem than others. One unusual way of avoiding the problem all together is to harvest tomatoes when pink color is first seen and let the fruit ripen at room temperature in the dark. Because the lycopene is produced as the fruit ripens it is often possible to avoid yellow shoulders by removing the fruit from the high temperatures and other stresses.



Maryland Department of Agriculture

## Maryland Clean Sweep Pesticide Disposal Program 2011/2012

Rob Hofstetter, Entomologist  
MDA Special Programs Coordinator  
[hofsterj@mda.state.md.us](mailto:hofsterj@mda.state.md.us)

Maryland Clean Sweep Pesticide Disposal Program

After a four year absence, the Maryland Department of Agriculture will once again offer an unwanted, unusable and/or obsolete pesticide disposal program. This program has operated "regionally" in the past. However, due to budget cuts, the Department has not had a program in place since 2007.

The 2011/2012 program will be offered throughout Maryland. This is a **FREE** program for any agricultural operation (farm, forest, nursery, greenhouse, etc.). As we cannot guarantee if and when this program will be offered again, MDA urges anyone with unwanted or unusable pesticides to take advantage of this year's program.

Registration forms are available on-line at: [www.mda.state.md.us/pdf/regform.pdf](http://www.mda.state.md.us/pdf/regform.pdf) or by calling the Pesticide Regulation Section office at 410-841-5710. Registration forms will also be available, in limited quantities, at each University of Maryland County Extension Office.

For more information, please contact Rob Hofstetter at the number above or via email at [hofsterj@mda.state.md.us](mailto:hofsterj@mda.state.md.us).



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## MID-ATLANTIC PRECISION AGRICULTURE EQUIPMENT DAY

Tuesday, August 30, 2011, 8:00 AM – 5:30 PM  
Caroline County 4-H Park, 8230 Detour Road, Denton, MD 21629  
[www.enst.umd.edu/extension/Events.cfm](http://www.enst.umd.edu/extension/Events.cfm)

*Please join us and learn how to make precision agriculture pay in your operation. Practical and informative advice will be given on sprayer and planter section control, variable rate seeding, economics and practical implementation of RTK and GPS, soil mapping, using technology for on-farm research and developing variable rate prescriptions, and much more. DE and MD Nutrient Management Credits & CCA credits will be available.*

**Speakers:**

- Dr. Randy Taylor, Oklahoma State University  
*Yield Monitors and Maps- Putting Data to Use with On-farm Research*
- Dr. Mike Buschermohle, University of Tennessee  
*Automatic Section Control Technology for Planters*
- Dr. Bobby Grisso, Virginia Tech  
*Mapping EC with Veris*
- Dr. John Fulton, Auburn University  
*Sprayer Section Control*
- Dr. Matt Darr, Iowa State University  
*Economics and Practical Implementation of RTK and Advanced GPS*

For more information please call: 410-228-8800 or 410-758-0166

*Partners: Virginia Tech, West Virginia, Penn State, and University of Delaware Cooperative Extension Services.  
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## 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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### Submit Articles to:

Editor,  
R. David Myers, Extension Educator  
Agriculture and Natural Resources  
7320 Ritchie Highway, Suite 210  
Glen Burnie, MD 21061  
410 222-6759  
[myersrd@umd.edu](mailto:myersrd@umd.edu)



**Article submission deadlines for 2011:** April 13 & 27; May 11 & 25; June 8 & 29; July 13 & 27; August 17; September 7.

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