

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 10 September 8, 2011

Field Observations from Southern Maryland

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- ✓ Southern Maryland was hammered with high winds and on average 10 inches of rain from hurricane Irene and another 10+ inches from Lee.
- ✓ Vegetable crops took a beating. Immature fruit, particularly squash, was bruised and damaged.
- ✓ Harvest of crops is difficult due to the muddy conditions. Losses from fruit rots are expected to occur in many cucurbit fields.
- ✓ Plasticulture strawberry plug plants will arrive soon, but fields are not ready.
- ✓ Much of the late sweet corn crop was blown down.
- ✓ Worm pressure in corn and brassica crops remains high.

Vegetable Crop Insect Update

By Joanne Whalen
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Cabbage

Continue to sample for cabbage looper, diamondback larvae, fall armyworm, beet armyworm and Harlequin bug. Be sure to select control options based on the complex of insects present in the field, especially beet armyworm which are difficult to control.

Lima Beans

Continue to scout for stink bugs, lygus bugs, soybean loopers, beet armyworm and corn earworm. Moths can still be found laying eggs in fields. A treatment will be needed if you find one corn earworm larvae per 6 ft-of-row.

Peppers

At this time of year, corn borer, corn earworm, beet armyworm and fall armyworm are all potential problems in peppers. So be sure to select the material that will control the complex of insects present in the field. Be sure to check local corn borer and corn earworm moth catches in your area by calling the Crop Pest Hotline (in state: 1-800-345-7544; out of state: 302-831-8851) or check our webpage at <http://ag.udel.edu/extension/IPM/traps/latestblt.html>. We continue to see economic levels of aphids, especially in fields where pyrethroids have been used on a weekly basis. Materials labeled for aphids are only effective if applied before populations explode.

Snap Beans

With the sustained high trap catches, you will need to consider a treatment for both corn borer and corn earworm. You should also watch for beet armyworms and soybean loopers. Sprays are needed at the bud and pin stages on processing beans for worm control. With the diversity of worm pest that may be present in fields, be sure to scout fields and select materials that will control the complex of insects present. For the most recent trap catches in your area and to help decide on the spray interval between the pin stage and harvest for ECB control in processing snap beans, you will need to call the Crop Pest Hotline (in state: 1-800-345-7544; out of state: 302-831-8851) or check our website at:

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

Spinach

Both webworms and beet armyworms moths are active at this time and controls need to be applied when worms are small and before they have moved deep into the hearts of the plants. Generally, at least 2 applications are needed to achieve control of webworms and beet armyworm.

Sweet Corn

With the continued high corn earworm trap catches, be sure that a spray is applied as soon as ear shanks are visible on plants (i.e. before you see any silk). If fall armyworms are

present in the whorl, you will need multiple whorl sprays for this insect before the ear shank spray to achieve effective control and to prevent larvae from dropping into the ear zone. Once fields are silking, you will need to check both blacklight and pheromone trap catches for silk spray schedules since the spray schedules can quickly change. Check our website at: <http://ag.udel.edu/extension/IPM/traps/latestbit.html> or call the Crop Pest Hotline (in state: 1-800-345-7544; out of state: 302-831-8851). Be sure to check all labels for days to harvest and maximum amount allowed per acre.

Vegetable Disease Update

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Cucurbit Downy Mildew

Cucurbit downy mildew was confirmed on pumpkin, summer squash and winter squash this week in DE. It will likely be more widespread following the storm. Maintain fungicide sprays specific for downy mildew if the foliage is still green and harvest is still planned.

Late Blight

Late blight was reported in a central New York county this past week on tomatoes in a homeowners garden. After the hurricane we might see some late blight develop on tomatoes.

Lima Bean Downy Mildew

Be sure to scout for lima bean downy mildew after the hurricane. Symptoms may take 7-10 days to develop after the rain ended. See previous issues for recommendations, or the [2011 Commercial Vegetable Production Recommendation](#).

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>

Observations After the Hurricane

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Hurricane Irene caused less damage than expected in the region. However, there were still significant impacts on crops in Delaware. The most obvious is lodging in field corn. On the vegetable side, lodging in sweet corn varied considerably from field to field, with many escaping damage.

High winds had the potential to batter many vegetables. The largest acreage currently in the field is lima beans and looking at many fields, they weathered the storm well with minimal pod drop and foliage damage. Cucurbit fields (watermelons, cucumbers, squash, pumpkins) were much more variable with significant foliage damage in many fields. Tomatoes, peppers, and eggplants also suffered considerable damage.

Peach and apple growers had considerable fruit drop and bruising of fruits due to wind and branch contact that will reduce marketable volumes.

Rainfall totals ranged from 6 to 14 inches depending on the site but flooding was much more limited than expected. However, wet fields have led to disease issues and quality problems in snap beans, tomatoes, pickles, and other crops with increases diseases such as white mold and Phytophthora. In pickles, excess soil makes washing much more difficult and has increased fruit rots. Excess water has caused severe cracking in tomatoes and cantaloupes with much of the late summer crop ruined.

The storm has affected later watermelons to a great degree. In 2010, because of the dry year, farmers were able to keep vines healthy and continue cropping past Labor Day in many fields. Later planted fields yielded well. This year, because of the extra heat stress in July and early August followed by Irene and the current cold night temperatures, vine health has declined greatly in many fields and growth has slowed, limiting late yields. Excess water has increased water-soaking in some varieties. Later plantings that were wind damaged by Irene have open canopies causing bleaching in some fields. Volumes are down, quality has suffered, and some buyers have left the region.

While it could have been worse, Irene has cost vegetable and fruit growers significant economic losses in the region.

Spotted Wing Drosophila Found in Central Maryland

By Jerry Brust
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A sample of fruit flies was given to me by Bob Rouse, a horticultural consultant, from fruit farms he consults for in Central Maryland; these flies were identified by me and then verified by the USDA as Spotted Wing Drosophila (SWD) *Drosophila suzukii*, the first find in our state. This is not good, but this pest has been moving steadily east over the last few years. The SWD is a temperate-zone fruit fly; native to Southeast Asia that prefers temperatures of 67-85° F. Adults are small (2-3 mm) flies with red eyes and a pale brown thorax with black stripes on the abdomen. The most distinctive trait of the adult male is a black spot towards the tip of each wing; the female does not have any wing spots (Photo 1). Larvae are tiny (up to 3.5 mm), white, cylindrical maggots that are found feeding in fruit. This pest was first identified in the western U.S. in 2008. In 2009 it was found in California, Florida, Oregon, Utah and Washington. In the last year or so it has been found in the Midwest and Pennsylvania. Long-distance dispersal usually occurs with the movement of infested fruit to new areas.

While it is not unusual to find fruit flies in late summer infesting overripe or decaying fruit these particular fruit flies are considered nuisances, not crop damaging pests. However, the spotted wing drosophila female lays her **eggs inside healthy unblemished fruit** with her saw-like ovipositor (Photo 1). The adult female can damage fruit when she oviposits while larvae contaminate fruit at harvest, causing it to become soft and unmarketable (Photos 2 and 3). It infests thin-skinned fruit such as grape, cherry, raspberry, blackberry (raspberries and blackberries appear to be very susceptible fruit), blueberry, and strawberry, etc. SWD overwinters in the adult stage and flies become active in spring, mate, and lay eggs in the thin-skinned fruit. Multiple generations develop each year wherever this insect can overwinter. At a constant temperature of about 75°F it takes only 9 days from egg to adult. This rapid developmental rate allows it to quickly develop large populations and inflict severe damage to a crop.

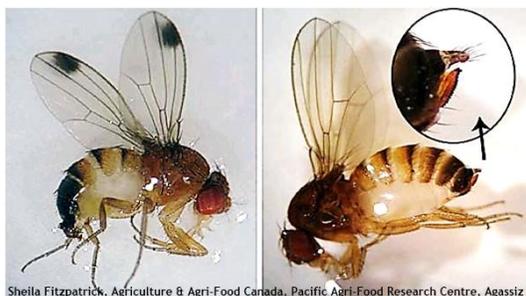


Photo 1. Male (left hand side) and Female (right hand side) spotted wing drosophila flies

The best thing to do is monitor for this pest if you have small fruit. Monitoring will help time insecticide applications for greatest effectiveness. You can use homemade traps to monitor for SWD. There are several sites that explain how to **make the traps:**

http://swd.hort.oregonstate.edu/files/webfm/editor/Wine_Grape_SWD_Bulletin_WSU.pdf

<http://jenny.tfrec.wsu.edu/opm/gallery.php?pn=165>

<http://edis.ifas.ufl.edu/in839>

or you can buy commercially made traps: <http://www.contech-inc.com/>

or

<http://ipm.wsu.edu/small/pdf/Spring2011MonitorIDControlSWD.pdf>



Photo 2. SWD damage in blackberry



Photo 3. SWD Oviposition marks on cherry

For any of these traps you will need to add 1 or 2 inches of apple cider vinegar to the bottom of the trap with a drop of unscented dishwashing soap to break the surface tension so the flies will drown. Hang the trap in the shade near berries preferably before fruit begins to ripen. Check the trap weekly for small flies with dark spots at the tip of their wings floating in the fluid. These will be male SWD. Put fresh apple cider vinegar and a drop of soap in each week or so. You also should observe your fruit regularly as it begins to ripen. On cherries and blueberries start checking fruit for punctures the female creates when she lays eggs as soon as fruit begins to develop any color. SWD stings are tiny and a hand lens helps. Pull open suspect fruit to see if there are larvae inside. If you find infected fruit you should spray to prevent the damage from increasing. The infestation level can increase quite rapidly if left untreated. Remove and destroy infested fruit as you monitor. Stings are not readily visible on berries so it is difficult to detect an early infestation by monitoring the fruit alone for damage.

Chemical Management: Malathion will control SWD and has a short PHI, but is very toxic to bees and natural enemies. If monitoring indicates a need to spray, the application should be made as soon as possible. In raspberries or strawberries, sprays may need to be repeated to keep SWD populations low during their prolonged fruiting period in summer and fall. Other possible alternatives to Malathion with fewer negative environmental effects are the spinosyns and neonicotinoids. To get satisfactory control with these alternatives two sprays may be required; the second applied 5 to 7 days after the first. Additional sprays may be needed for berries with a prolonged fruiting period. Be sure to check the label before applying any chemical as the specific chemicals that can be used on one fruit can't always be used on others.



Flooding and Vegetables

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There is still considerable acreage of watermelons, sweet corn, pumpkins, beans, cabbage, potatoes, and other fresh market vegetable crops in the field on Delmarva. On the processing side, the majority of lima beans have yet to be harvested and there are significant acres of pickles, snap beans, and other processing crops in the field. Many of these crops will be at risk in the coming days due to hurricane Irene.

A late summer hurricane or tropical storm with both wind damage and excess rain can cause major issues in vegetable crops, most notably:

- Damage due to flooded soils in all vegetable crops
- Increased disease incidence in all vegetable crops
- Lodging damage in crops like sweet corn

Other articles will address diseases in with excess rainfall. I will focus on flooding effects on the physiology of vegetable plants.

Flooded and Waterlogged Soils

In flooded soils, the oxygen concentration drops to near zero within 24 hours because water replaces most of air in the soil pore space. Oxygen diffuses much more slowly in water filled pores than in open pores. Roots need oxygen to respire and have normal cell activity. When any remaining oxygen is used up by the roots in flooded or waterlogged soils, they will cease to function normally. Therefore, mineral nutrient uptake and water uptake are reduced or stopped in flooded conditions (plants will often wilt in flooded conditions because roots have shut down). There is also a buildup of ethylene in flooded soils, the plant hormone that in excess amounts can cause leaf drop and premature senescence.

In general, if flooding or water-logging lasts for less than 48 hours, most vegetable crops can recover. Longer periods will lead to high amounts of root death and lower chances of recovery.

While there has not been much research on flooding effects on vegetables, the following are some physiological effects that have been documented:

- Oxygen starvation in root crops such as potatoes will lead to cell death in tubers and storage roots. This will appear as dark or discolored areas in the tubers or roots. In carrots and other crops where the tap root is harvested, the tap root will often die leading to the formation of unmarketable fibrous roots.
- Lack of root function and movement of water and calcium in the plant will lead to calcium related disorders in plants; most notably you will have a higher incidence of blossom end rot in tomatoes, peppers, watermelons, and several other susceptible crops.
- Leaching and denitrification losses of nitrogen and limited nitrogen uptake in flooded soils will lead to nitrogen deficiencies across most vegetable crops.
- In bean crops, flooding or water-logging has shown to decrease flower production and increase flower and young fruit abscission or abortion.
- Ethylene buildup in saturated soil conditions can cause leaf drop, flower drop, fruit drop, or early plant decline in many vegetable crops.

Recovering from Flooding or Waterlogging

The most important thing that you can do to aid in vegetable crop recovery after floods or water-logging is to open up the soil by cultivating (in crops that still small enough to be cultivated) as soon as you can get back into the field. This allows for oxygen to enter the soil more rapidly. Nutritionally, sidedress with 50 lbs of N where possible.

In fields that are still wet, consider foliar applications of nutrients. According to Steve Rieners at Cornell "Use a low salt liquid fertilizer to supply 4 to 5 lb nitrogen, 1 lb phosphate (P_2O_5) and 1 lb potash (K_2O) per acre. Since nitrogen is the key nutrient to supply, spraying with urea ammonium nitrate (28 % N solution) alone can be helpful. These can be sprayed by aerial or ground application. Use 5 to 20 gallons of water per acre. The higher gallons per acre generally provide better coverage". As with all foliar applications, keep total salt concentrations to less than 3% solutions to avoid foliage burn.



Washing Pesticide Contaminated Clothing

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Farmers know how important it is to be careful when using pesticides. We all strive to use the least toxic, effective option, read the label and follow the directions, calibrate, measure carefully and wear the required personal protective equipment.

But after you finish making a pesticide application, it is also important to be careful with the clothing you were wearing. If you throw contaminated clothing in with the rest of the family's laundry, you risk exposing your family to that pesticide. Also, if you do not clean your clothing properly, you risk exposing yourself the next time you wear it.

Here is a list of tips that should help you be safe. You might want to clip this list out and hang it by your washing machine:

- Discard clothing if it becomes soaked with a highly toxic pesticide.
- Do not wear contaminated clothing or boots into the house to avoid bringing pesticide residue into your living space.
- Take protective clothing off inside out as you remove them to keep most of the pesticide inside, and away from the surface that will be handled by the person doing the laundry.
- Pre-rinse clothing and boots outside using a hose or a designated and marked washtub.
- Wash goggles, respirator (remove the charcoal filter first), gloves and boots in hot, soapy water after each use. Store clean protective equipment away from where pesticides are stored.
- Designate a separate hamper to identify contaminated clothing so the person who does the wash knows it needs special attention.
- Make sure the person who does the laundry knows what pesticide was used, and reads the label for any special instructions for cleaning.
- Keep unlined rubber gloves in the wash room to handle the pesticide-soiled clothing. Carefully wash the outside of the gloves after every use and only use them for this purpose.

- Launder pesticide contaminated clothing the same day to avoid having it sit around where family members could come into contact with it.
- Wash contaminated clothing separately from the rest of the family laundry.
- Use hot water.
- Use heavy-duty liquid detergent to remove oil-based pesticides. (Emulsifiable concentrates are oil-based.)
- Do not overfill the washing machine. Wash only a few garments at a time.
- Double rinse the load.
- Re-wash the contaminated clothing two or three times if necessary.
- Clean the machine after you wash the load by running one complete cycle on empty, using hot water and detergent.
- Line-dry the clothing to avoid contaminating the clothes dryer.



WMREC FRUIT, VEGETABLE & FIELD CROP TWILIGHT MEETING on Thursday, SEPTEMBER 22, 2011 from 5:00 p.m. - 7:30 p.m.

HIGHLIGHTS INCLUDE:

- Updates from University of Maryland Extension Specialists and USDA researchers - Bryan Butler, Galen Dively, Kate Everts, and Starker Wright
- The latest on the Brown Marmorated Stink Bug affecting: Vegetables, Fruit and Field Crops
- Update on disease control in vegetable crops
- Tour of ongoing projects including:
- Maryland pumpkin trials with 20 varieties
- New NC 140 CG rootstock Trial planting with Cripp's Pink and Brookfield Gala on G.202 rootstock budded directly from tissue culture, G.202, G.935, and G.41 rootstocks all budded from stool bed plants
- Apple seedling evaluations
- Bt sweet corn varieties
- Mobile high tunnel with strawberry, tomato, and raspberry production

Sandwiches and refreshments will be provided. Registration is not required, but will help us to plan for handouts and refreshments. Please RSVP to 301-791-1304 or dwoodrin@umd.edu

MEETING FLYER:

http://www.agnr.umd.edu/Extension/local/WMREC/files/2011_WMREC_Twilight_Fullsheet.pdf

2011
Pumpkin and Sweet Corn Twilight
University of Maryland Wye Research and Education Center
Queenstown, MD
September 27, 2011
4:30-6:30 PM



2011 WyeREC Pumpkin & Sweet Corn Twilight, on Tuesday, September 27th from 4:30 to 6:30 p.m.

You Will Hear:

University of Maryland specialists discuss insect and disease control and various cultural practices.

You Will See:

- ✓ 20 varieties of large and small pumpkin types as part of an IPM demonstration/spacing study;
- ✓ 10 varieties of winter squash;
- ✓ *and taste* 4 late season varieties of BT sweet corn.

A light dinner fare will be available.

There is no fee for this program, but we ask that you please pre-register with Debby Dant at: 410-827-8056 X115 or ddant@umd.edu by September 20, 2011.

For more program information, contact Mike Newell at: 410-827-7388, mnewell@umd.edu.

If you require special assistance to attend this event, please contact Debby Dant no later than September 20, 2011.

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

**Published by the University of Maryland Extension
Agriculture and Natural Resources
Profitability Impact Team**

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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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