



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

Vegetable Crop Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Cole Crops

Continue to sample for cabbage looper, diamondback larvae, beet and fall armyworms and Harlequin bug. Although the pyrethroids will provide control of Harlequin bugs they are not effective on beet armyworm or diamondback. Be sure to scout and select control options based on the complex of insects present in the field.

Lima Beans

Continue to scout for stink bugs, lygus bugs, and corn earworm. A treatment will be needed if you find one corn earworm larvae per 6 ft-of-row. Soybean loopers have been detected in a few fields. Remember that they are a migratory pest, difficult to control and pyrethroid resistance has been documented in states to our south. If they are present in the mix, you will need to select a material labeled for soybean loopers. Be sure to check the label for rates, restrictions (including plant back/rotational crop restrictions) and days from last application to harvest.

Melons

Continue to scout all melons for aphids, cucumber beetles, and spider mites. We continue to see a significant increase in aphid populations. Treatments should be applied before populations explode and leaf curling occurs. In addition, be sure to read the label

regarding when a penetrating surfactant is needed in order to achieve effective control.

Peppers

At this time of year, corn borer, corn earworm, beet armyworm and fall armyworm are all potential problems in peppers. 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 (302-831-8851) or our webpage at <http://agdev.anr.udel.edu/trap/trap.php>. We are starting to see aphid populations increasing, especially in fields where pyrethroids have been used on a weekly basis. Labeled materials are only effective if applied before populations explode.

Snap Beans

At this time, 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. You will need to call the Crop Pest Hotline (302-831-8851) or 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

<http://agdev.anr.udel.edu/trap/trap.php>

<http://extension.udel.edu/ag/insect-management/insect-trapping-program/ecb-and-cew-moth-catch-thresholds-for-processing-snap-beans/>

Spinach

As soon as plants emerge, be sure to watch for webworms and beet armyworms. Both 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. As a reminder, the pyrethroids have not provided effective beet armyworm control in past years. Remember that both insects can produce webbing on the plants. Generally, at least 2 applications are needed to achieve control of webworms and beet armyworm.

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 since the spray schedules can quickly change. Trap catches are generally updated on Tuesday and Friday mornings on our website (<http://agdev.anr.udel.edu/trap/trap.php>) and the Crop Pest Hotline (302-831-8851). Information on scouting sweet corn and how to use the trap catch information can be found at <http://extension.udel.edu/ag/insect-management/insect-trapping-program/action-thresholds-for-silk-stage-sweet-corn/>.

Focus on Soil Health - Winter Killed Cover Crops for Vegetable Cropping Systems - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Cover crops that put on significant growth in the fall and then die during the winter can be very useful tools for vegetable cropping systems. These winter killed cover crops add organic matter, recycle nutrients, improve soil health, and allow for earlier spring vegetable planting.

Winter killed cover crops that are late summer and fall planted include spring oats, several mustard species, and forage and oilseed radish. Earlier planted summer annuals (millets; sorghums, sudangrasses, and hybrids; annual legumes such as sunn hemp or forage soybeans; buckwheat and many others) can also be used as

winter killed species. Timing of planting will vary according to the species being used and winter killed species selection will depend on when fields will be available for seeding. Summer annuals should be planted in late July or during August for use in a winter killed system to obtain sufficient growth.

Spring oats and mustard species can be planted from late August through September. For best effect, forage and oilseed radishes should be planted before the middle of September. Spring oats, radishes and mustards are not suited for October or later planting because they will not produce adequate fall growth.

All of the winter killed non-legumes mentioned above will benefit from the addition of 30-60 lbs of nitrogen.

The following are several options for using winter killed species with vegetables:

1) *Compaction mitigation for spring planted vegetables.* Where there are compacted fields, the use of forage radishes has worked very well as a winter killed cover crop by “biodrilling”. The extremely large taproot penetrates deep into the soil, and after winterkilling, will leave a large hole where future crop roots can grow. Oilseed radish also provides considerable “biodrilling”. Winter killed radishes works well with spring planted crops such as spinach, peas, early sweet corn, and early snap beans. One issue with radishes is that on mild winters they may not fully winter kill.

2) *Early planted vegetables.* A wide range of early planted vegetables may benefit from winter killed cover crops. For example, peas no-till planted or planted using limited vertical tillage after a winter killed cover crop of forage radish, oilseed radish, or winter killed mustard have performed better than those planted after conventional tillage. Early sweet corn also has potential in these systems as do a wide range of spring vegetables including spinach, potatoes, and cabbage. Winter killed radishes and mustards also have the advantage of outcompeting winter annual weeds leaving relatively weed free fields and also in recycling nutrients from the soil so that they are available in the spring for early crops (decomposition has already occurred).

3) *Mixed systems with windbreaks for plasticulture.* By planting planned plasticulture bed areas with winter killed cover crops and areas in-between with cereal rye you can gain the benefits of these soil improving cover crops and eliminate the need make tillage strips early in the spring. The winter killed areas can be tilled just prior to laying plastic.

4) *Bio-strip till.* By drilling one row of forage or oilseed radish and other adjacent rows with rye or other small grains, you can create a biodrilled strip that winter kills and that can be no-till planted into the spring without the need for strip-till implements. This opens up dozens of options for strip tilling (seed or transplanted) spring vegetables.

Sunscald Very Prevalent in Peppers this Year - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

I know this seems very obvious to most growers, as we have sunscald every year in our vegetable plantings. This year just seems to be especially bad as I have gotten several calls from growers about a strange problem in their peppers that looks like sunscald, but couldn't be. The reason given that it could not be sunscald is because the plants have thick foliage and the fruit seem well covered. Sunscald occurs when peppers or other vegetables are exposed to the direct rays of the sun during hot weather; the damaged areas may become papery and bleached or tan colored, and these areas often are covered with a black fungal growth (Figure 1). It is more apparent on plants that have sparse foliage or that have lost a large proportion of leaves to a leaf-defoliating disease. But almost all the farms I visited had plants that looked very good (Figure 2). The problem is that pepper plants often lean to one side or the other because of winds blowing them in certain directions. When this occurs sunscald can be especially prevalent on previously shaded pepper fruit that are suddenly exposed to the sun, even for a short period time. The damaged areas are vulnerable to infection by fungi (Black mold), and bacteria, so that at times a pepper fruit will be found that is a soupy, smelly watery mess. Sunscald is most prevalent on green fruit. Staking and tying

pepper plants will greatly decrease the leaning plants and greatly decrease sunscald. The pepper plants do not have to be tied often, usually once is all it takes and stakes do not need to be any taller than the pepper plants (so broken tomato stakes work well) (Figure 3). Peppers in a tied versus non-tied section of field had vastly different sunscald problems. The staked and tied section had less than 2% of fruit sunscald damaged; the non-tied section had 17% sunscald damaged fruit; same variety planted the same day.

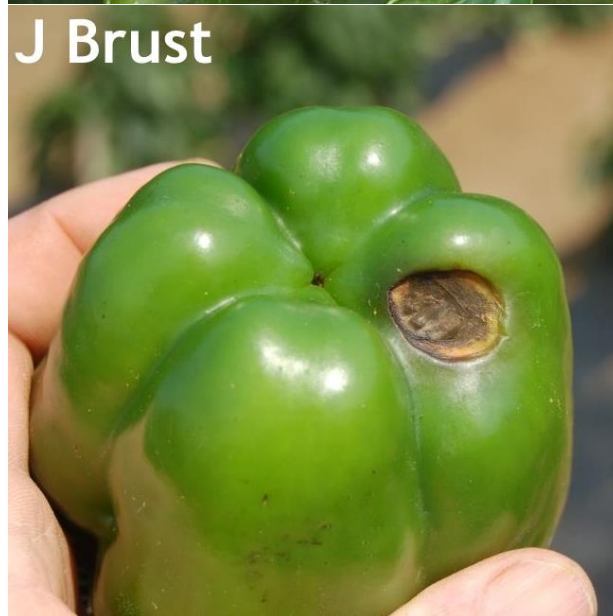


Figure 1. Pepper fruit with small and large areas of sunscald and black mold growth



Figure 2. Pepper plant that appears to have good foliage for fruit cover but still has sunscald fruit.



Figure 3. Staked and tied pepper plants, 4-5 plants between stakes, one string.

Agronomic Crops

Agronomic Crop Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Soybeans

Once again we are finding a few fields with whiteflies; however, populations are not as high

as past years. They have generally not been a problem in the past, especially if moisture is adequate. They are related to aphids (that is they are in the same order of insects) and so can cause yellowing on the leaves if populations are high enough. The following links provide pictures of whiteflies and some additional comments regarding whiteflies in soybeans.

<http://bulletin.ipm.illinois.edu/article.php?id=832>

<http://ipcm.wisc.edu/blog/2012/07/questions-about-whiteflies-in-soybean/>

We continue to find a variety of defoliating caterpillars as well as an increase in grasshoppers and bean leaf beetles in full season and double crop fields. In a few cases, we are seeing fungal pathogens that can help crash caterpillar populations. Continue to use defoliation thresholds to make treatment decisions for these insects. Remember, that in addition to defoliation, grasshoppers and bean leaf beetles can feed on and/or scar pods.

Soybean loopers (which are also defoliators) continue to be found in fields throughout the state. As a reminder, they are not effectively controlled by the pyrethroids so materials labeled for soybean loopers like Belt SC, Besiege, Blackhawk, Radiant or Steward will be needed. Also, the highest labeled rate should also be used for soybean looper control.

Continue to watch for stink bugs in all fields during the pod development and pod fill stages. We continue to see an increase in populations, especially green stink bugs. You will need to sample for both adults and nymphs when making a treatment decision. As a general guideline, we are using a new threshold in the Mid-Atlantic Region: 5 stink bugs per 15 sweeps. This is the threshold for soybeans produced for grain. If you are producing soybeans for seed, the threshold is still 2.5 per 15 sweeps.

Corn earworm populations still remain low and spotty in most fields throughout the state. However, moth catches in pheromone traps at the end of this week still remain relatively high. Since population levels will vary from field to field, the only way to know if you have an

economic level will be to scout all fields. Once pods are present, the best approach to making a decision on what threshold to use for corn earworm is to access the Corn Earworm Calculator developed at Virginia Tech (<http://www.ipm.vt.edu/cew/>) which estimates a threshold based on the actual treatment cost and bushel value you enter. As of the 2014 season, we still were able to achieve earworm control in soybeans using a pyrethroid as long as: (1) larvae were treated when threshold levels were present (not exploded population levels), **AND** (2) larvae were small at the time of application, **AND** (3) the highest labeled rate was used. If insects like soybean looper, beet armyworm or fall armyworm are in the mix, you will want to consider “worm” specific materials like Belt, Besiege, or Steward for the complex of larvae present. Over the next couple of weeks, another factor to consider when selecting a chemical will be the presence of corn earworm larvae resulting from migratory moths laying eggs in our fields that are resistant to pyrethroids. Lastly, if economic levels of stinkbugs are in the mix, you will need to add a pyrethroid to the “worm” specific materials like Belt or Steward. Besiege is a combination of a pyrethroid (lambda-cyhalothrin) and a “worm” specific material (chlorantraniliprole).

We continue to see soybean aphids in fields throughout the state. Remember, this aphid is more of a problem when the weather remains cooler. The economic threshold for soybean aphid established in the Midwest is 250 aphids per plant. Populations should be increasing and most of the plants should be infested (>80 percent) in order to justify an application. This threshold is appropriate until plants reach mid-seed set (R5.5). Spraying at full seed set (R6) has not produced a consistent yield response in the Midwest.

Soybean Nematodes and Other Diseases Present Now - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

Soybean Nematodes

Damage from Root knot nematode (RKN) (Figure 1) and Soybean cyst nematode (SCN) (Figure 2) are fairly evident in some fields right now.



N Kleczewski
Figure 1. Galls from Root Knot Nematode on a soybean root. Galls are irregular and range in size.



R Mulrooney
Figure 2. Small, lemon shaped cysts indicative of SCN. These are much smaller than nodules. Nodules will have a pink to orange center when split open.

Galls from RKN are easily observed by removing plants from the soil, and often result in large almost tumor-like growths on roots. To observe SCN, the roots and soil must be removed carefully with a shovel, and the soil gently separated from the root. SCN females or cysts are small, lemon shaped, and white to yellow. A hand lens may be required to observe SCN cysts on roots. Nodules, which form as a part of the

soybean plant's beneficial relationship with nitrogen-fixing bacteria, can be distinguished from SCN cysts by size; nodules are larger than cysts. When split, nodules have an orange to pink center, which differentiates them from small galls caused by RKN. Areas of a field severely affected by nematodes will have chlorotic or stunted plants, often in irregularly shaped patches. Symptoms may occur earlier or more severely in dry areas of fields. You also can have significant nematode pressure without symptom development. In these cases, you will not notice the problem until harvest when you look at your yield monitors.

There are several RKN resistant cultivars currently on the market. If you have RKN in your soybeans, consider using a RKN resistant cultivar the next time you grow beans in that field. Resistant beans should also be used when planting into fields with a history of SCN; however, due to limited sources of SCN resistance available in our area, you should avoid planting continuous beans and rotate to a crop such as corn for at least one season in between soybean plantings. If you have significant SCN issues, rotating out of soybeans for two or more years may be needed to sufficiently reduce the nematode population.

As a side note, remember that a "race" of a nematode actually means that that type of nematode is the most commonly occurring in your field or region. Cultivars that are screened by industry originate from different locations, and therefore the genetic makeup of the screening population differs. This, and the complexity of SCN resistance, means that resistance (reduction of SCN reproduction) between cultivars with the same type of resistance can differ significantly. Figure 3 illustrates this point.

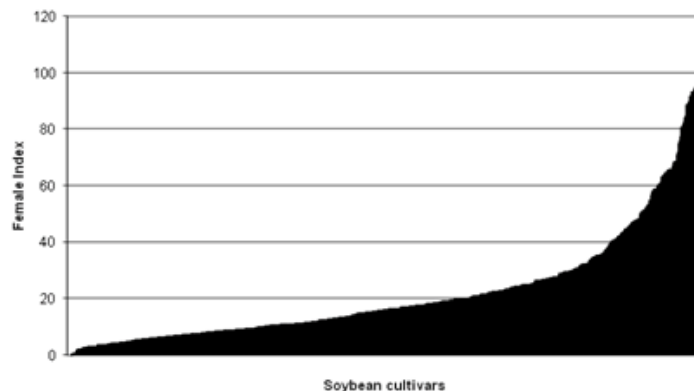


Figure 3. The female index of 622 cultivars labeled as resistant to race 3 SCN treated with 1000 eggs of a Race 3,6 population. The female index indicates the amount of reproduction, and therefore the amount of likely damage due to SCN. From *Niblack et al 2009. A Standard Greenhouse Method for Assessing Soybean Cyst Nematode Resistance in Soybean: SCE08 (Standardized Cyst Evaluation 2008) Plant Health Progress.*

We are working to start to develop this sort of information for our growers to help with cultivar selection. In the meantime, if you have SCN in your fields, plan on taking a sample in the next few weeks to assess SCN egg numbers. For more information, keep an eye out for the factsheet on SCN that we developed in coordination with the Delaware and United Soybean Boards that will be published in the next issue of *Beyond the Bean*.

Other Soybean Diseases Present

The most common diseases in soybean at this time are Soybean Vein Necrosis, which was present in all full season and many double crop fields, and brown spot in full season beans. There is no current management for SVNV, and we typically do not recommend fungicides for brown spot as this disease often is restricted to the lower canopy. In general, 25-30% defoliation of the lower canopy by R5 is required before we even start to see a significant reduction in yields resulting from brown spot.

Time to Scout for Stalk Rot in Field Corn -
Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

Do you have droopy ears (Figure 1)?



Figure 1. Premature senescence and droopy ears are indications of potential stalk rot and standability issues in the future.

Now is the time to scout for stalk rot issues in corn. Scout 1 site per 10-20 acres of field. At each site, push 10-20 plants 30-45 degrees from vertical. If more than 10% of the plants lodge, consider scheduling that field for early harvest. Remember that most issues with stalk rots start with stressed plants. This stress allows many of our stalk or late season root rot fungi to infect and potentially speed up issues with lodging. The best way to manage stalk rots is to minimize stress by planting at optimal populations, managing insect pests and foliar diseases such as grey leaf spot, and using a balanced nutrition program.

We came across the following stalk rot/root rot pathogens on our trips last week.

Charcoal Rot

Look for white to grey macerated tissue in the lower stalk, near the soil like. Black pin head structures often are observed on these tissues. Charcoal rot is often encountered during hot, dry years. In this case, the field was a dryland field under a good deal of drought stress (Figure 2).



Figure 2. Charcoal rot of corn. Note the grey macerated pith and black pinhead structures.

Red Root Rot

I really do not like the name of this disease because it doesn't really cause a red discoloration, but more of a dark pink/purple discoloration. I suppose, "Dark pink/purple root rot" is not an improvement. You will need to dig up the plant and look at the fine roots to see symptoms of the disease (Figure 3). Reduced root growth or feeder root development may be evident in addition to the discoloration. Red discoloration on the brace roots are not indicative of red root rot, and fungi, such as

Fusarium, which are ubiquitous in soils, also can cause a pink discoloration of roots.



N Kleczewski
Figure 3. Dark pink/purple discoloration of feeder roots indicative of red root rot.

Announcements

Poultry Grower's Disease Control Workshop: Keeping Disease Off of the Poultry Farm

Wednesday, September 30, 2015

If you missed the first workshop on June 11th, the same program will be presented on September 30 at the following times and locations:

10:00 a.m. – 12:00 noon
VFW Worcester Post 93
2017 Bypass Rd., Pocomoke City, MD

2:00 p.m. – 4:00 p.m.
Bridgeville Fire Hall
311 Market St., Bridgeville, DE

6:00 p.m. – 8:00 p.m.

Ruthsburg Community Club
105 Damsontown Rd., Queen Anne, MD

TOPICS INCLUDE:

Avian Influenza Outbreaks in Commercial Poultry in the U.S.

Dr. David Shapiro, *Veterinarian, Perdue Farms*

Practical Biosecurity Best Management Practices for Broiler Growers

Dr. Jon Moyle, *Extension Specialist, University of Maryland Extension*

Ms. Jenny Rhodes, *Ag Extension Educator, University of Maryland Extension*

Mr. Bill Brown, *Poultry Extension Agent, University of Delaware Cooperative Extension*

Avian Flu Response and Control Plan on Delmarva

Dr. Don Ritter, *Veterinarian, Mountaire Farms*

REGISTRATION DEADLINE is September 25, 2015

Please register online by visiting: <http://ag.udel.edu/rec/>. When registering, please be sure to choose the location of the workshop you would like to attend.

For more information, please contact Lisa Collins at lcollins@udel.edu or call (302) 856-2585 x702

This event is hosted by University of Delaware Cooperative Extension and University of Maryland Extension, in cooperation with Delmarva Poultry Industry, Inc., Delaware Department of Agriculture and Maryland Department of Agriculture.

Pasture Walk

Wednesday, September 16, 2015 6:00-8:00 p.m.
University of Delaware Webb Farm
508 S Chapel St, Newark, DE 19713.

This pasture walk is specifically focused on grazing season extension for beef cattle and sheep through the use of brassicas, BMR Pearl Millet and other short term high dry matter yielding grazing crops.

1.25 NM credits will be offered.

To register call (302)831-2506 by Sept 11.

2015 Delaware Cooperative Extension Horticulture Short Courses

Pruning

Wednesday, September 16, 4:00-6:00 p.m.
Kent County Extension Office, 69 Transportation
Circle, Dover

Cost: \$15

How do I prune a tree/shrub? When and why should I
prune? This workshop will provide individuals the
tools for proper pruning methods that will benefit the
plant and satisfy your customer.

*Instructors: Dot Abbott, Richard Pratt, and Tracy
Wootten*

Register with Jan Unflat (302) 730-4000 or
jmunflat@udel.edu.

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Landscape 101 Series

Cost: \$10/session

Register with Carrie Murphy (302) 831-2506 or
cjmurphy@udel.edu for any of the courses below.

Turf Maintenance

Wednesday, September 2, 4:30-5:30 p.m.
University of Delaware Botanic Gardens

Revisit methods for maintenance of fall turf. Topics
discussed will include establishment or reseeding,
aeration, fertilization and insect management options.

Credits: 1 Pest., 0.75 Nut. Mgmt., 1 CNP

Instructor: Brian Kunkel

Plant Identification – Herbaceous Plants

Wednesday, September 9, 4:30-5:30 PM
University of Delaware Botanic Gardens

Learn to identify some of the great herbaceous plants
used in the landscape. We will cover the common
disease and insect pests of each and strategies for
incorporating into the landscape. Meet at UDBG
Perennial Garden.

Credits: 1 Pest., 1 CNP

Instructors: Valann Budischak and Sue Barton

Soils

Wednesday, September 16, 4:30-5:30 PM, University
of Delaware Botanic Gardens

Soil improvement is an ongoing process – discover
options available to you. This session will cover the

basics of soil health. Meet at the entrance to Fischer
Greenhouse.

Credits: 1 Nut. Mgmt., 1 CNP

Instructors: Carrie Murphy and Tracy Wootten

Plant Identification- Woody Shrubs

Wednesday, October 7, 4:30 – 5:30 PM, University
of Delaware Botanic Gardens

Learn to identify some of the woody shrubs used in the
landscape. We will cover the common disease and
insect pests of each and strategies for incorporating
into the landscape. Meet at UDBG kiosk in the Charles
Dunham Garden.

Credits: 1 Pest., 1 CNP

Instructors: Valann Budischak and Sue Barton

Weed Identification/Maintenance

Wednesday, October 21, 4:30 – 5:30 PM, University of
Delaware Botanic Gardens

Examine some common weeds found in turf and
flower beds during the fall and we will discuss
management options.

Credits: 1 Pest., 1 CNP,

Instructor: Brian Kunkel

Plant Identification- Shade Trees

Wednesday, November 4, 4:30 – 5:30 PM, University
of Delaware Botanic Gardens

Learn to identify some of the major shade trees used in
the landscape. We will cover the common disease and
insect pests of each and strategies for incorporating
into the landscape. Meet at UDBG kiosk in the Charles
Dunham Garden.

Credits: 1 Pest., 1 CNP

Instructors: Valann Budischak and Sue Barton

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of August 13 to August 19, 2015

Readings Taken from Midnight to Midnight

Rainfall:

no rainfall recorded

Air Temperature:

Highs ranged from 89°F on August 17 to 82°F on August 13.

Lows ranged from 71°F on August 19 to 58°F on August 14.

Soil Temperature:

78.6°F average

Additional Delaware weather data is available at http://www.deos.udel.edu/monthly_retrieval.html and <http://www.rec.udel.edu/TopLevel/Weather.htm>

Weekly Crop Update is compiled and edited by Emmalea Ernest, Associate Scientist - Vegetable Crops

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