



Volume 25, Issue 8

May 19, 2017

## Vegetable Crops

**Poor Stands or Stand Loss Due to Seed or Transplant Issues Revisited** -Gordon Johnson, *Extension Vegetable & Fruit Specialist*; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

As spring planting season continues at a rapid pace, there are more reports of poor stands or stand losses in vegetable crops. The culprits are often soil insects or diseases; however, lower quality seed or plants can also be a source of the problem. You will most commonly see problems with lower quality plants or seeds when there is a cold period right after planting.

As we progress into the warmer part of the planting season, it is often assumed that late spring and summer plantings will not have stand issues because soil temperatures are warm and seeds should germinate and emerge quickly and plants should root out quickly if there is adequate moisture. With seeds, this is not always the case, especially if seed is of low vigor. Signs of low vigor seed will be abnormal appearance in the bag (shriveled, cracked, off color, misshapen), small seedlings that emerge late or do not emerge at all, abnormal growth (twisting, snaking, or corkscrewing), small shriveled cotyledons in beans, small or distorted true leaves, swollen or split hypocotyls or coleptiles, and bleached out seedlings. Another issue affecting seed germination and emergence would be uneven or inadequately applied seed treatments (fungicides and insecticides).

Seed companies do a very good job of producing quality seed and most seed is produced in drier areas where seed diseases are limited. Once seed is harvested it is conditioned (cleaned, lower weight or damaged seed removed), treated, packaged, and stored under proper temperature and humidity. As seed is distributed it often goes through several phases where it is handled and stored in different environments. Larger lots may be broken into smaller units and then repackaged by resellers. Once seed arrives at the grower it will be stored and handled again, finally making it to the planter. In each new storage and handling activity, there is potential to do damage to the seed. Rough handling, high temperatures, and high humidity are particularly damaging to seeds.

Poor quality transplants can be due to diseases or other pest damage. There are however other causes of quality issues in plants such as being poorly hardened off, overwatered, stressed, over or under-fertilized, overgrown or leggy, over-mature, or root bound. As with seeds, improper plant handling can lead to quality problems including overcrowding in greenhouse and holding areas, rough handling of trays, and storing in light limited conditions for extended periods. Breaking plant stems, especially those with excessive growth, is a common problem in transplanting, as is damage to roots when pulling plants out of trays.

When troubleshooting stand loss or unevenness it is important to consider these issues affecting seed or plant quality.



Reduced bean stand and abnormal growth due to seed quality issues.



Low vigor, dead cotyledons and abnormal unifoliate leaf growth in bean seedling from low quality seed.



Bleached cotyledons and stunted growth in bean seed with quality issues.

### Pea Harvest Season is Underway -Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

The processing pea harvest season started on May 17 this year, about one week early than normal with February planted peas. Some of these early fields had freeze damage that resulted in erratic pod development and lower yield potential. With the higher than normal temperatures this week pea progress has advanced quickly making harvesting decisions challenging. Under high temperatures, peas can go from ideal harvest condition to overmature in a day, with some varieties increasing by more than 30 tenderometer units over 24 hours. Saturday will bring cooler weather and more seasonable temperatures are expected for the remainder of May, which will favor slower pea development.

### Virus Problems Found in Garlic Early This Year - Jerry Brust, IPM Vegetable Specialist, University of Maryland; [jbrust@umd.edu](mailto:jbrust@umd.edu)

Last year I had an article sometime in July about what I called "garlic viruses" which I had not seen in our area before, but I know must have been around before this. This year some garlic growers are noticing this virus complex already in their fields and I am not sure if that is because they are more aware of it or because the virus complex is expressing itself earlier. Symptoms of virus infection are plants that display yellowing tips on many leaves with some that are completely yellow (Fig. 1). If you look closely at the yellow leaves you'll see mottling or striping on the leaves (Fig. 2). Symptoms are usually more pronounced on young leaves. Infected plants are stunted and bulb size can be reduced. Garlic crops infected with certain of these viruses are more susceptible to weather conditions like extreme heat, and do not keep well post-harvest.

What I am calling garlic virus is caused by several different viruses that can be grouped under the name "Potyvirus"; all symptomatic garlic that was tested this year was positive for Potyvirus. Some people lump these viruses under the name "garlic mosaic". In this case garlic



mosaic is thought of as a disease caused by one or more viruses belonging to the Potyvirus group which includes onion yellow dwarf virus, leek yellow stripe virus, and others. These viruses can be transmitted through the planting stock or by aphids and it is thought because garlic is clonally propagated probably most of the planting stock is infected with some type of virus. These viruses are usually mild and do not seriously affect yield. The problem comes in when the plants are infected with several different Potyviruses, and then there can be moderate to severe yield reductions. We may have had more aphid movement earlier in the year because of the mild winter and early spring, which may have increased additional virus infections in garlic plantings. You cannot reduce virus transmission by spraying pesticides. Any garlic with symptoms should be watched and possibly harvested early or rouged out if yellowing and decline increase in the coming weeks.



Figure 1. Garlic plants showing symptoms of infection with virus complex



Figure 2. Streaking, striping on leaves of garlic infected with virus complex

## Potato Late Blight Update #2 - May 15, 2017 - Nathan Kleczewski, Extension Specialist - Plant Pathology; [nkleczew@udel.edu](mailto:nkleczew@udel.edu); @Delmarplantdoc

Greenrow- May 1, 2017

Frederica		
Date	DSV	Total DSV
5/4-5/15	3	3
5/1-5/4	0	0

*We have yet to reach the late blight fungicide application threshold and no late blight has been reported in the region as of this time. Hot, dry weather will reduce disease potential in the upcoming days.*

Notes: Season severity of 18 severity values indicates the need for the first fungicide application. An accumulated severity of 7 after fungicide application identifies the need for a subsequent fungicide application. You can personalize your late blight forecasts for specific fields, sign up for email or text alerts, and enter in management information at <http://blight.eas.cornell.edu/blight/>.

Real time fungicide application timing tables for locations within Delaware can be accessed at <http://blight.eas.cornell.edu/blight/DE>

See the 2016 Commercial Vegetable Production Recommendations-Delaware for recommended fungicides: <http://extension.udel.edu/ag/vegetable-fruit-resources/commercial-vegetable-production-recommendations/>

Any suspect samples can be sent to the Plant Diagnostic Clinic or dropped off at your local Extension office. Dr. Nathan Kleczewski can also be contacted at [nkleczew@udel.edu](mailto:nkleczew@udel.edu) or 302-300-6962.

The website USABlight tracks tomato and potato late blight across the nation and can be found here: <http://usablight.org/>. Information on scouting, symptomology, and management can also be found on this website.

## Fruit Crops

**Growth Regulator Herbicide Damage to Grapes** -Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

We have recently identified growth regulator herbicide damage in a commercial vineyard.

Late April and May is often the time that we see severe damage to grapes from growth regulator herbicide drift, most commonly 2,4-D, which is used in herbicide burndown programs for no-till field crops (soybeans). Dicamba can also cause severe damage and is often applied to turf, lawns, pastures, and hayfields. Vineyards next to areas where these growth regulator herbicides will be applied will be at high risk of injury from off-target movement (volatilization and drift). Grapes are very sensitive to these compounds and injury can occur at levels 100 times lower than labeled rates.

Grapes are most sensitive when new shoot growth is occurring prior to flowering. When exposed to 2,4-D or dicamba at this critical growth stage, the new growth will show severe leaf distortion and stunted shoots. In the most severe cases shoots will die. Grapes will have poor fruit set and low yield when exposed prior to and during flowering. When grapes are exposed later in the season, while leaf and shoot symptoms may be present, there is usually minimal yield loss. Grapes may eventually grow out of 2,4-D damage and produce normal leaves; however dicamba damage may cause abnormal growth throughout the season.

Grape growers and vineyard managers should work closely with neighboring farmers or property managers and educate about the need to avoid growth regulator herbicide applications in late April and May near the vineyard. Planted windbreaks and screens can help reduce movement but will not replace distance or vineyard isolation as a management tool.



2,4-D damage to grape shoots. Photo from Virginia Tech Learning Resources Center, Virginia Polytechnic Institute and State University, Bugwood.org

## Agronomic Crops

**Got Slugs? Soybean Edition** - Bill Cissel, Extension Agent - Integrated Pest Management; [bcissel@udel.edu](mailto:bcissel@udel.edu)

Last week, I talked about slug injury on corn. Unfortunately, slugs in soybeans can be a little more difficult to manage. The reason for this is that slugs will feed on soybean before they emerge and kill the plants outright. In many cases, you don't realize you have a slug problem until you return to a field, 7-14 days after planting, expecting to see a beautiful stand of soybeans, only to find that you have poor emergence or that you don't have a stand at all. The classic scenario where we tend to see the greatest problem is when soybeans are no-tilled into heavy crop residue and planting conditions were a little wet and the seed slot did not get closed all the way. Slugs will travel up and down the open seed furrow, using it like a "highway", to feed on the germinating seeds. Once the soybean plants emerge, slugs will continue to feed on the cotyledon, unifoliate, and trifoliate leaves. Above ground slug feeding injury can be confused with bean leaf beetle damage so look for slugs and "slime trails" to make sure you accurately identify the culprit.





Below ground slug feeding injury



"Slug Highway"



Above ground slug feeding injury

Tillage is the most effective cultural control method if a field has a slug infestation, especially in re-plants situations. We have limited experience with how well "slug bait" can control slugs when they are feeding on germinating plants before they emerge and if slug bait is effective at reducing damage in a re-plant situation.

Here is a report from our 2013 Delaware Soybean Board funded project: *Management of Slugs in Delaware Soybean Fields*. This report has more information evaluating the effectiveness of chemical control management of slugs in soybeans:

<https://s3.amazonaws.com/udextension/ag/files/2013/12/Final-2013-Delaware-Soybean-Board-Report-Slug-Management-in-Soybeans.pdf>

Another tactic, aside from tillage or making sure the seed furrow is closed, is to adjust your planting date. Prior to egg hatch, planting early allows the plants to emerge before heavy slug feeding injury occurs from juvenile slugs. Once the slugs hatch, delaying planting has been effective by allowing plants to rapidly emerge. In several of the fields I have been in this week, I have seen newly hatched grey garden slugs. In general, anything that will promote rapid seed germination and emergence will help to get the plants out of the ground before slugs have an opportunity to kill the plants outright.



**Metribuzin for Soybeans** – Mark VanGessel,  
*Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu)

As preemergence herbicide use increases, more metribuzin applications are being made. Metribuzin is sold under a number of generic names including Tri-Cor and Glory. Metribuzin is a component of Canopy, Authority MTZ, Boundary, and Trivence. Metribuzin provides effective control of a wide range of broadleaf weeds, including common ragweed and Palmer amaranth. One concern raised about metribuzin is crop safety. UD Research has tested metribuzin for years at rates of 3 to 4 oz wt/A and have not seen issues with safety. We know in situations with overlaps or compacted soils, the risk of injury increases. Another variable is soybean variety. Many of the varieties listed on the metribuzin labels are no longer grown in this area. The University of Arkansas has tested numerous current soybean varieties for tolerance to metribuzin and that information is available at <http://www.arkansas-crops.com/wp-content/uploads/2016/12/2016-Metribuzin-Tolerance-of-Soybean-Varieties-FINAL1.pdf>

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**Final Considerations in Small Grains** –

Nathan Kleczewski, *Extension Specialist – Plant Pathology*; [nkleczew@udel.edu](mailto:nkleczew@udel.edu);  
[@Delmarplantdoc](https://twitter.com/Delmarplantdoc)

Our barley is starting to ripen and wheat finished flowering last week in Delaware and Maryland. Growers will want to check fields 18-24 days after flowering to assess fields that may have elevated risk levels for vomitoxin contamination. Fields with a high incidence of Fusarium Head Blight may be at risk for elevated vomitoxin. To assess Fusarium head blight (FHB), run multiple transects through a particular field. The number of transects should be sufficient to give you a fairly good overall representation of the field. When we run field level assessments for FHB a transect typically is 75-100 yards long. Fifty heads are picked during the course of walking the transect, with care taken to not look at the heads being sampled. This way you ensure that your sample is not biased, purposely or not, in favor of healthy or symptomatic heads. After you have collected all the heads from a transect,

mark the total collected and the number with FHB symptoms (bleached florets or heads with pink at the base of the floret in many cases). If you have a high incidence of FHB you should try and do the following for that field:

1. Harvest it as early as possible
2. Dry grain to at least 15% moisture if you have the ability to do so
3. Store the grain separate from fields without significant FHB issues
4. Harvest with an increased fan speed, which helps remove lightweight, vomitoxin-rich tombstones from the heavier weight, higher quality grain.



Lightweight kernels called “tombstones” (left) compared to healthy wheat grain.

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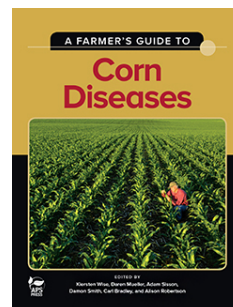
**New Field Crop Weed Management Guide** –

Mark VanGessel, *Extension Weed Specialist*;  
[mjv@udel.edu](mailto:mjv@udel.edu)

There is a new “Mid-Atlantic Field Crop Weed Management Guide” developed by weed specialists from Penn State, University of Delaware, University of Maryland, Virginia Tech, and West Virginia University. The 240-page guide covers corn, sorghum, soybean, small grains, and hay and pastures. The guide includes information on commonly used herbicides for these crops, including relative effectiveness for burndown, preemergence, and postemergence control of most of the common weeds in the region. In addition, there are tables for herbicide premixes and what is included in the premixes, and a section on management of problem weeds. The guide is available in the Delaware county Extension offices for \$15 or can be ordered on-line at <http://extension.psu.edu/publications/agrs136>.

Available on-line are the printed copies for \$25 for a printed copy; an enhanced pdf copy for use on computers and tablets for \$15; or both a hard copy and pdf for \$35. A free low resolution pdf is available at

<http://extension.udel.edu/ag/weed-science/weed-management-guides/>. Note the low resolution version is not "searchable".



<http://www.plantmanagementnetwork.org/book/cornfarmersguide/>

**Be Sure to Scout Early-Planted Corn** - Mark VanGessel, *Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu)

Most of our soil-applied herbicides provide about 4 to 5 weeks of control, depending on rate, soil types and soil moisture. Some of the first planted corn has been in the ground at least five weeks, so be sure to get back to those fields to see if a postemergence herbicide is needed. With the warm weather we are experiencing, species like Palmer amaranth, common ragweed, and common lambsquarters, will be growing fast and will quickly get to sizes that may limit herbicide effectiveness.

## General

**Guess the Pest!** - Bill Cissel, *Extension Agent - Integrated Pest Management*; [bcissel@udel.edu](mailto:bcissel@udel.edu)

Congratulations to Jeff Peat for identifying the grass sawfly in this past week's Guess the Pest and for being selected to be entered into the end of season raffle for \$100 not once but five times. Everyone else who guessed correctly will also have their name entered into the raffle. Jeff will also receive a FREE copy of A Farmer's Guide to Corn Diseases. Click on the Guess the Pest logo below to participate in this week's Guess the Pest! For Guess the Pest # 7, we will also be giving away A Farmer's Guide To Corn Diseases (\$29.95 value) to one lucky participant.



The correct answer to this past week's Guess the Pest is Grass Sawfly. Grass sawflies damage small grains by clipping grain heads. They are often confused with true armyworms which also clip small grain heads. There are several reasons why it is important to be able to distinguish between grass sawflies and true armyworms:

1) Grass sawflies are more damaging than true armyworms because they prefer to feed on small

grain stems as opposed to true armyworms that will typically feed on leaves before clipping heads. Also, grass sawfly damage usually occurs before the peak of armyworm damage.

2) The threshold for grass sawflies (wheat and barley - 0.4 linear ft of row) is lower than the threshold for true armyworms (barley - 1 per linear ft of row/ wheat-1- 2 -per linear ft of row).

3) Not all products that are labeled for true armyworm control will provide control of grass sawflies.

4) Insecticide rates also differ between the two species for some products.

There are several features that can be used to distinguish grass sawflies from true armyworm.

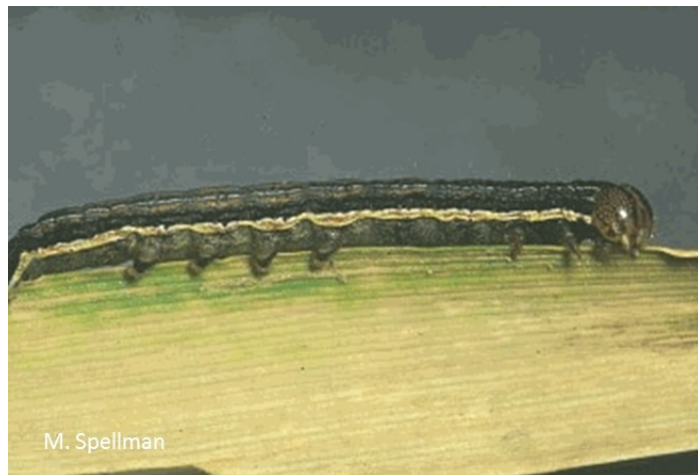
Grass sawflies larvae are active during the day and can often be found on the plants so "shaking" plants to dislodge larvae is necessary when sampling. They can be identified by their green color, large amber head, and 5-7 pairs of fleshy prolegs. Counting the number of prolegs is the most reliable way to determine if the "worm" is a grass sawfly or true armyworm.



Grass Sawfly Larva

True armyworms are active at night and can often be found curled around the base of plants

or under crop residue during the day. Larvae have 4 pairs of fleshy abdominal prolegs **not including the pair of legs at the very end of the abdomen**. There also appears to be a large gap between the 3 pairs of true legs and the start of the fleshy prolegs.



True Armyworm Larva

If your field is at threshold for grass sawflies, here are several things to keep in when selecting which product to apply. Is the insecticide labeled for grass sawfly control? What is the days to harvest restriction (this varies among products)? Is the insecticide labeled on the crop (not all products are labeled for all small grains)?

Here is a link to our Extension Fact Sheet for additional information on identification, biology, and management of grass sawflies and true armyworms in small grains:

<http://extension.udel.edu/factsheets/grass-sawfly-and-true-armyworm-management-in-small-grains/>

Here is a link to our Small Grain Insect Recommendations:

<https://cdn.extension.udel.edu/wp-content/uploads/2012/05/18063827/Insect-Control-in-Small-Grains-final-2017.pdf>



## Guess the Pest # 7



What is this small grain disease? Think you know the answer.... Click on the *Guess the Pest* icon below or go to <https://goo.gl/forms/pWjHQUpmjABFB0v32> to submit your best guess.



## Announcements

### Twilight Tailgate Session

Thursday, June 8, 2017 6:00 p.m.

UD Cooperative Extension Research Demonstration Area

3/4 mile east of Armstrong Corner on  
Marl Pit Road -Road 429  
Middletown DE

Join your fellow producers and the UD Extension team for a discussion of this year's demonstration trials and current production issues. Other topics will include nutrient management, pest management and weed management.

Bring: A tailgate or a lawn chair.

Credits: DE Nutrient Management (1) and Pesticide (1) credits .

We will wrap up with the traditional ice cream treat.

*Please call our office at (302) 831-2506 or email [sharonlu@udel.edu](mailto:sharonlu@udel.edu) to register by Thursday, June 1, for additional information, or if you require special needs assistance.*

**Dan Severson, Extension Agent – Agriculture, New Castle County Cooperative Extension**

The meeting is free and everyone interested in attending is welcome. If you have special needs in accessing this program, please call the office two weeks in advance.

It is the policy of the Delaware Cooperative Extension System that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age or national origin.

## Growing Farmers Workshops

Coverdale Farm Preserve is a 356-acre farm and nature preserve located in Greenville, DE. We are pleased to offer a series of free hands-on workshops for farmers of all levels of experience and scale of operation.

Registration is required. *To register please contact Michele Wales: [michele@delnature.org](mailto:michele@delnature.org).*

Spring 2017 Series: Protected Culture Growing includes the use of greenhouses, high tunnels, low tunnels, hoop houses, and caterpillar tunnels. Both high and low tech options are designed to help defend your crops against the extremes of nature from torrential rains, parching drought, scorching heat, and frigid cold. Protected Culture Growing extends your seasons, brings harvests earlier in spring and later in fall to your customers, and can be used on acres of open field to urban raised bed gardens. Engage in hands-on workshops that take you from construction to production targeting key topics for your growing success.

### Troubleshooting in High Tunnels

Wednesday, June 21, 6:00pm – 8:00pm

Keep your plants thriving and productive. Learn to identify common pests including insects, plant diseases, nutrient deficiencies. Discover preventative strategies, steps, and solutions to compromising conditions in order to maximize yields.

## Energize Delaware Farm Program

If you want to reduce your energy costs, the Energize Delaware Farm Program can benefit you! The program offers loans up to \$400,000 and grants up to \$100,000 per farm for qualified applicants.

### The program provides:

- Energy audits provided by EnSave, Inc.
- Preliminary renewable energy assessments
- Cash incentives for qualifying equipment
- Project installation support
- Low-interests loans
- Support accessing additional financial assistance

The program is offered on a first-come, first-served basis with limited funding, so call EnSave at (800) 732-1399 today to get started!

Visit the Energize Delaware Farm Program website at: <https://www.energizedelaware.org/energize-delaware-farm-program>

## Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of May 11 to May 17, 2017

Readings Taken from Midnight to Midnight

### Rainfall:

0.30 inch: May 11

0.30 inch: May 12

0.85 inch: May 13

### Air Temperature:

Highs ranged from 92°F on May 17 to 56°F on May 12.

Lows ranged from 58°F on May 17 to 47°F on May 14.

### Soil Temperature:

64.5°F average

Additional Delaware weather data is available at <http://deos.udel.edu/>

*Weekly Crop Update is compiled and edited by Emmalea Ernest, Associate Scientist - Vegetable Crops with assistance from Don Seifrit.*

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