



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

Vegetable Crop Insect Scouting - David Owens, Extension Entomologist;
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Brassicas

Late instar diamond back moth larvae were observed earlier this week in canola. Be sure to scout fields and pay strict attention to product rotations to avoid hitting the same generation with the same products.

Converting Poultry Houses into Growing Facilities - Gordon Johnson, Extension Vegetable & Fruit Specialist; gjohn@udel.edu

Converting Poultry Houses into Growing Facilities

With many poultry houses being retired or unused, there has been an interest in converting these houses into indoor lighted hydroponic growing facilities. All over the US, unused facilities such as warehouses are being converted for growing vegetables and herbs (such as leafy greens and basil). This has been made possible by the decrease in lighting cost with LED grow lights.

There are some specific areas to address in poultry house conversions because of produce food safety.

1) Poultry equipment

Prior to renovation, remove all feeders, brooders, and waterers and associated cables and pulleys. Determine what wiring will be kept and remove any that will not be used.

2) Floors

Remove all litter completely with attention paid to side walls and then excavate the top 2-6 inches of floor. Apply alum to lower the pH of the remaining floor (eliminates ammonia release). Cover the floor area with 2-6 inches of clean fill soil and then cover the whole area with impervious geotextile fabric.

3) Ceiling

if the ceiling is intact and in good condition remove all loose dust, cobwebs, and other loose materials using a commercial grade vacuum (if ceiling is in poor condition, it may have to be replaced with a cleanable covering). Sanitize the ceiling with appropriate materials that have activity against pathogens. Dry sanitizers will reduce wetting and may be most appropriate. Cover the ceiling with 6 mil white poly plastic.

4) Walls, doors

if the wall is intact and in good condition remove all loose dust, cobwebs, and other loose materials using a commercial grade vacuum (if the wall is in poor condition, it may have to be replaced). Sanitize walls with appropriate materials that have activity against pathogens. Dry sanitizers will reduce wetting and may be most appropriate. Cover walls with 6 mil white poly plastic. Doors should be replaced.

5) Vents, fans, and pads

If side vents are to be used, vacuum and dry sanitize vent boxes, cables, and pulleys. Cool pad vents should be replaced with new pads and water systems should be sanitized. Fans and fan housings should be cleaned completely and then dry sanitized.

6) Heaters

Heaters should be removed and replaced with new vented heaters or other alternative heating. Heat the house for 4-7 days at greater than 120 F for the final pathogen kill step.

7) Installation of growing systems

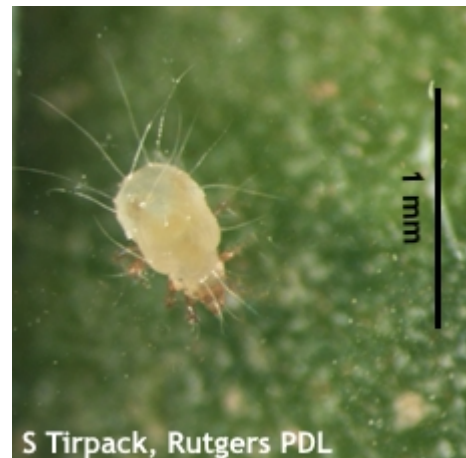
Install new wiring for lighting and control systems and then install grow lights. Install appropriate plumbing and water treatment systems. Install hydroponic growing systems and associated tanks and pumps (deep water/tank, drip/bucket, or nutrient film/gutter system).

Spinach Crown Mites Found - Jerry Brust, *IPM Vegetable Specialist, University of Maryland*; jbrust@umd.edu

Spinach crown mites *Rhizoglyphus sp.* have been found in spinach fields over the last few days. These mites feed within the folds of new leaves in the crown of spinach plants. This feeding causes the new leaves to become deformed as they grow (Fig. 1). Crown mite adults are extremely small, bulbous, nearly transparent mites that also may have a yellow-beige body color with reddish-brown legs (Fig. 2). A good characteristic to look for to identify these mites is the sparse long hairs mostly found on the back end of the mite (Fig. 2). Crown mite eggs are spherical and clear and laid on the creased leaf surfaces in the crown area. I have talked about this genus of mite several times over the years, but always in regard to bulbs of garlic or onion where they feed on and open the bulbs up to infection from soil diseases. Some reports state that crown mites can act as vectors for plant pathogens such as *Pythium* and *Rhizoctonia*, but this is not definitive. Although crown mites are in the same genus as bulb mites they may or may not be the same species. As you can see there is still much that is not understood about these pests.



G Brust, University of Maryland
Figure 1. Crown leaves fed on by spinach crown mites are distorted and ragged with necrotic margins (arrows) developing as leaves expand.



S Tirpack, Rutgers PDL
Figure 2. Spinach crown mite adult with sparse long hairs over its body

The spinach crown mite is most damaging in soils high in organic matter and when there are cool moist conditions - plants grow a little more slowly and the mites proliferate in this type of environment. Because these mites can consume organic matter they can survive in soils after the crop has been removed. This is one reason they are difficult to control as they can survive for fairly long periods of time with no crop being present. The other reason they are difficult to 'control' is we do not realize they are causing the problem until it is too late.

Most control recommendations include sanitation and crop rotations as being important as are fallow periods. Pyrethroids are a possible chemical control, as is Neem; any chemical control has to get down into the crown of the plant to have any chance of working. There has been little research conducted on the most efficacious material for these mites.

Agronomic Crops

Agronomic Crop Insect Scouting - David Owens, Extension Entomologist; owensd@udel.edu

Early Season Moth Activity

Trap Location	True Armyworm per night	Black Cutworm per night
Willards, MD	0.4	1
Salisbury, MD	0	5.3
Laurel, DE	0	6.3
Seaford, DE	2.4	7.7
Bridgeville, DE	0.1	3.0
Harrington, DE	0.4	5.6
Smyrna, DE	1.5	5.9
Kenton, DE	2.1	2.1
Pearson's Corner, DE	0.4	0.9
Sudlersville, MD	0.1	0.7

Small Grains

Aphid pressure has been declining due to presence of entomopathogenic fungus. Cereal leaf beetle larvae are active. Continue scouting for grass sawfly and true armyworm, especially in barley that has already received a head fungicide application. We are starting to fall into the pre harvest interval concerns. All pyrethroids but Mustang Maxx have a 30 day PHI.

Field Corn

Now that corn is up, be sure to scout fields for seedling pest damage. Soil pests should be adequately controlled by seed treatment. There is no rescue treatment for them. Affected plants will appear heavily stunted and wilt. Cutworms will leave a row of circular holes in the emerging leaves when they are small and cut plants when they get larger. Small cutworms should be controlled by seed treatment and traits. Action thresholds when plants have less than 2 leaves

are 3% cut plants and 10% leaf feeding. For larger plants, thresholds are 5% cut plants.

Wheat Disease Update - Alyssa Koehler, Extension Field Crops Pathologist; akoehler@udel.edu

Wheat is in various stages of heading across the state. In Georgetown, main tillers are fully headed and we are getting close to flowering. If you plan to apply a fungicide for Fusarium Head Blight, the application window is rapidly approaching. On the FHB Prediction Center, <http://www.wheatcab.psu.edu/>, today's prediction for eastern Sussex County is medium to high risk. There is a chance of rain all weekend, which will likely maintain medium to high risk levels as more plants reach 10.5.1 and begin to flower (Figure 1) over the weekend and into early next week.



A Koehler, University of Delaware

Figure 1. Wheat at Feekes 10.5.1. beginning flowering

General

Over the past week or two, symptoms of Barley Yellow Dwarf Virus (BYDV) have shown up in barley and wheat fields. Symptoms can include yellow to purple leaf discoloration, curling of the leaves, and stunting (Figure 2). Leaf discoloration begins at the tip and the color and level of symptom development can vary based on variety, weather, fertility, and a number of other factors. In wheat, early infections are typically associated with more stunting and red-purple to yellow leaves, while later infections tend to have yellow flag leaves without stunting. BYDV is transmitted by aphids with most infection occurring in the fall and early winter. Early infection is more damaging than infection of mature plants. Resistant varieties are available in oat, but there is only limited host resistance in barley and wheat. At this point in the season, spraying for aphids will not have an impact on disease levels.



Figure 2. Wheat leaves with purple and yellow symptoms on wheat infected with Barley Yellow Dwarf Virus

Magister Miticide/Fungicide Labeled - David Owens, Extension Entomologist; owensd@udel.edu

The miticide/fungicide Magister (Fenazaquin) has been labeled by Gowan on melons, fruiting vegetables, hops, legumes, and fruit trees. Only one application can be made per year, and applications should be made in at least 50 gallons per acre. It is a group 21A miticide, same mode of action group as the miticide Portal (Fenpyroximate) and the insecticide Torac (Tolfenpyrad). For resistance management, do not apply either product before or after applying Magister. It also has pollinator protection language on its label. Be sure to consult the label and the special pollinator language before making applications.

How Much N Could You Expect from Your Cover Crop? - Amy Shober, Extension Nutrient Management and Environmental Quality Specialist; ashober@udel.edu and Jarrod O. Miller, Extension Agronomist, jarrod@udel.edu

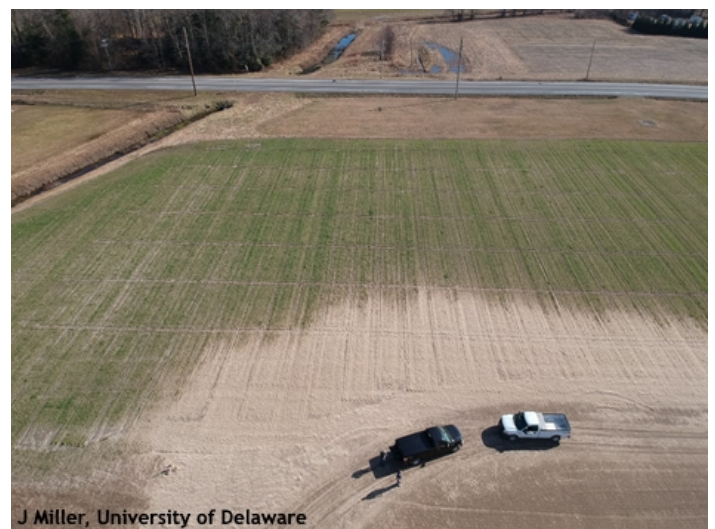
Small grains or legumes are commonly planted as cover crops in Delaware. While small grains are good at scavenging left over soil nitrogen (N) in the fall, they are not as likely as a legume cover crop to release that N early in the spring. It is helpful to remember that the C:N ratio of a cover crop can predict N availability to crops in the spring. A cover crop with a C:N < 20 at termination will be easily broken down by soil microbes and release N to the soil. In contrast, a cover crop with a C:N >30 at termination could result in tie up (immobilization) of soil N. If N is tied up by microbes, it will not be available for the emerging crop in the spring but may be available later in the season as that residue breaks down.

The timing of cover crop termination will directly affect the C:N ratio and N availability to the emerging crop. For small grain cover crops, the C:N ratio will increase past the boot stage, as more N is moved from the stem to the developing head. Therefore, earlier termination

of small grain cover crops will result in more N released from the cover crop residue in the early spring. However, early termination may reduce the ability of small grain cover crops to provide other benefits, like weed suppression. So even though the C:N ratio will increase as the small grain cover crop develops, you may choose to terminate late to get these other benefits. Leaving high C:N ratio biomass on the surface (no-till) will reduce the N tie up by microbes. However, if you decide to incorporate residues with tillage, you may increase early season N tie up because the residue has more contact with soil microbes following incorporation.

Later termination of a legume cover crop has the opposite effect on soil N availability. Terminating a legume cover crop prior to bud stage (March to early April) will result in little to no N contribution from the cover crop. This is because N fixing bacteria do not have enough time to form nodules on the roots of the legume cover crop prior to bud stage. Legumes with more biomass will contribute more soil N in the spring. Termination at flowering stage will result in the most available N. A red clover or crimson clover cover crop terminated at flower stage could contribute 40-80 lb N/acre depending on the quality of the stand. If the stand is poor (<2 ton/ac), you can expect available N to be on the lower end of the scale. In contrast, a good stand (>3 ton/ac) will provide N toward the upper end of the scale. Similarly, hairy vetch, while tricky to manage, could contribute between 50-100 lb N/acre if terminated late. If termination occurs at bud stage, you can expect available N to be approximately 50% of what you could get with termination at flowering.

https://docs.google.com/forms/d/e/1FAIpQLSfU PYLZnTRsol46hXmggj8fvt5f8-Jl0eEUHb3QJaNDLG_4kg/viewform?c=0&w=1



Guess the Pest! Week 4 & 5 - David Owens, Extension Entomologist, owensd@udel.edu

Last week's Guess the Pest is a bit tricky. The second photo below is another picture of the field. As you can see, the injury happened earlier in the year. It is a physical type injury, one that many vegetable growers are especially concerned with. You may enter a new guess if you would like by clicking on the link below or stick with the one you have entered. Remember, you can't win bragging rights if you don't play!

Herbicide Resistant Common Ragweed in the Region - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu and Frank D'Amico

Some common ragweed in the region (DE, MD, and NJ) have evolved resistance to glyphosate, PPO-herbicides (Group 14), and ALS-herbicides (Group 2). Some populations are resistant only to glyphosate, others are resistant to all three herbicide groups. It is difficult to predict when a

population is resistant to one, two or three herbicide groups without testing; and testing common ragweed can take months. So if you are experiencing difficulty with common ragweed control, it is best to manage the field as if it is resistant.

Common ragweed is one of the first summer annual weeds to emerge in the spring, so you need to consider common ragweed when developing burndown herbicide programs. Early emergence also means that delaying crop planting will allow a larger portion of the common ragweed to emerge and be effectively controlled with burndown herbicides. Effective options include paraquat, triazine herbicides, 2,4-D, or dicamba. Liberty can control common ragweed; but my experience is that Liberty performs better with full sun or as a postemergence application.

Common ragweed control in corn can be achieved with atrazine or simazine used at

planting. Postemergence applications of atrazine, dicamba-products, or atrazine plus HPPD-herbicide (i.e. Callisto, Laudis, Impact, or Armezon) have provided very good control of common ragweed.

Control of common ragweed in soybeans is more challenging. Using soybean varieties that allow Liberty, dicamba, or 2,4-D is important. Preemergence herbicides options are limited and not highly effective. Linuron (Lorox or Linex), Command, Valor, or metribuzin are the best, but they seldom provide complete control. A postemergence herbicide is often needed and options are limited to Liberty, dicamba, or 2,4-D since uncertainty of resistance to glyphosate, PPO or ALS herbicides. While many of the hard to control populations are resistant to postemergence applications of PPO-herbicides (such as Reflex, Blazer, Cobra), Valor applied as a preemergence herbicide still provides control and is an option for preemergence applications.



In the photo above all the seeds were collected from the same field, grown in the greenhouse and treated postemergence with glyphosate, Reflex (Group 14), or FirstRate (Group 2). The herbicides were applied at 1X, 2X, and 4X rates when the plants were 3-inches tall. The field contains both resistant and susceptible plants. Top left was treated with glyphosate at normal use rate; bottom left was treated with 4X the normal use rate; top right was treated with 4X the normal use rate of Reflex; and bottom right is 4X rate of FirstRate.

Announcements

Spring Pasture Walk

Thursday, May 21, 2019 6:00 - 8:00 p.m.
Whitehead Cattle Company
1303 Dexter Corner Rd, Townsend, DE 19734

Credits: Nutrient Management (0.75) Pesticide credit(1.0)

Come and see how Whitehead Cattle Company uses pasture to effectively feed their beef herd. Learn how to identify weeds and how to control them in a pasture setting. In addition, learn about soil health and how healthy soil is the key to making farms more productive, profitable and resilient—and better prepared to meet the challenges of the 21st century. Learn how to take a hay sample and visually evaluate hay. The workshop will also feature a talk on Pesticide safety - responsible decision-making and actions to protect pesticide users, public health, plant and animal health, and the environment

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.

To register or request more information, please call our office at (302)831-2506. Please call to register by Friday, May 10.

AGENDA

Welcome and Introductions

6:00-6:05

Dan Severson, University of Delaware Cooperative Extension

Tour of Pastures and Pasture Management

6:05-6:20

George and Lynda Whitehead, Whitehead Cattle Company

Weed Identification and Control in Pastures

6:20-6:50

Quintin Johnson, University of Delaware Cooperative Extension

Pesticide Safety

6:50-7:15

Dr. Kerry Richards, University of Delaware Pesticide Safety Education Program

Soil Health

7:15-7:40

Jayne Arthurs, NRCS Research Conservationist

Proper Hay Sampling and How to Visually Evaluate Hay

7:40-7:55

Dan Severson, University of Delaware Cooperative Extension

Wrap up and Evaluations

7:55-8:00

Dan Severson, University of Delaware Cooperative Extension

DSU Blueberry Field Day

Tuesday, June 18, 2019 8:30 a.m. to 2:30 p.m.
Delaware State University
Outreach & Research Center
884 Smyrna-Leipsic Road, Smyrna, DE

Topics:

- soil pH testing will be done before workshop starts
- blueberry planting and management
- post-harvest handling
- pest management

This workshop is free but please call 302-857-7796 or email Lnpaudel@desu.edu to register.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of April 25 to May 1, 2019

Readings Taken from Midnight to Midnight

Rainfall:

1.01 inch: April 26

0.01 inch: April 29

Air Temperature:

Highs ranged from 81°F on April 30 to 59°F on April 29.

Lows ranged from 56°F on May 1 to 43°F on April 29

Soil Temperature:

63.6°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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