WEEKLY CROP UPDATE
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Vegetable Crops

Vegetable Crop Insect Management – *Joanne Whalen, Extension IPM Specialist*; jwhalen@udel.edu

Cabbage
Be sure to watch for imported cabbage worm (ICW) and diamondback moth larvae (DBM) within a week of transplanting. As a general guideline, treatment is recommended if you find 5% of the plants infested with larvae. If DBM is the predominant species, be sure to select an insecticide that is effective for this insect pest since it can be difficult to control. The pyrethroids have not provided effective control of DBM in many cases, especially where resistance has been documented. Please refer to the Commercial Vegetable Recommendations for suggested chemical controls

https://cdn.extension.udel.edu/wp-content/uploads/2012/03/20132545/ColeCrops.pdf

Peas
As soon as plants emerge, be sure to sample on a weekly basis for pea aphids. On small plants, you should sample for aphids by counting the number of aphids on 10 plants in 10 locations throughout a field. On larger plants, take 10 sweeps in 10 locations. As a general guideline, a treatment is recommended if you find 5-10 aphids per plant or 50 or more aphids per sweep. Although beneficial insects can help to reduce aphid populations, cool temperatures will favor an increase in aphid populations but will slow beneficial insect activity. As a general rule, you need one beneficial insect per every 50-100 aphids to help crash populations.

Pea Damage from Freezing – *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

Peas are very cold hardy and can tolerate freezing temperatures down to the low 20s. Lower temperatures (below 20°F) or a combination of high winds (gusts over 30 mph) and freezing temperatures (below 25°F) can cause damage to pea plants, sometimes killing them to soil level. Peas that are germinating or just cracking the ground will have little damage.

If pea tops are frozen to the ground level, they will develop new stems from dormant buds below ground. There will be 1-3 new stems that develop. This will be seen within a week after the frost. These stems will develop and flower later than undamaged plants. Generally, freeze damaged peas will yield 5-20% less due to the differences in maturities in the field and having weaker plants.

Fungicide Products for Managing Powdery Mildew on Cucurbit Crops – *Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland*; keverts@umd.edu

There are many new fungicide products for management of powdery mildew on cucurbits such as pumpkin, squash, cucumber and melon.

Last year we conducted a trial at the University of Maryland's research farm in Salisbury that included some of these new fungicides (and a few "old" fungicides). The fungicides tested in this trial are in Table 1. Note that some of these fungicides, such as Quintec, are not labelled on all cucurbits, so check the labels carefully.

Table 1. List of fungicides and Fungicide Resistance Action Committee (FRAC) Code tested in 2015.

FRAC Code M5 (Contact fungicide)	Bravo Weatherstik
FRAC Code 3	Proline
FRAC Code 3	Procure
FRAC Code 7	Fontelis
FRAC Code 3 + 7	Aprovia Top
FRAC Code 3 + 7	Luna Experience
FRAC Code 13	Quintec
FRAC Code U6	Torino

Several lessons could be gleaned from this trial that confirm results from other trials.

1) **Always rotate fungicides with products in different FRAC Code groups.** When rotated with Procure, Luna experience performed significantly better than when used without a rotation partner.

2) **Products that have some systemic activity perform better than products with only contact activity.** In our trial, when Aprovia Top was alternated with Bravo Weatherstik, it was only moderately effective in reduction powdery mildew. However in alternation with Procure, Aprovia Top was much better at reducing powdery mildew.

3) **Using the best fungicides earlier in the season will improve control.** We designed some treatments to see if applying the most effective rotation partner early or late was better for control. The differences were small, but when the better product was applied early, the control was marginally better.

The two best treatments in this trial were Luna Experience alternated with Procure, and Quintec alternated with Procure. Aprovia Top alternated with Procure, and Torino alternated with Procure significantly reduced powdery mildew, but were not quite as effective. Better than the control, but even less effective was Fontelis alternated with Torino.

Fruit Crops

Freezes, Frost and Frost/Freeze Protection

– *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

Fruits and fruit flowers are damaged by temperatures below 28°F and by frost. Temperatures in Delaware reached 21°F or lower on April 6. Another freeze is predicted for Saturday, April 9. The term freeze means that temperatures dropped below 32°F. Frost is the formation of ice crystals on crops and occurs when the dew point is near or below freezing. You can have a freeze without frost and a frost without a freeze. Both are damaging to plant tissue.

Frost and freeze protection methods vary with fruits and the type of freeze expected. Advective freezes occur with freezing temperatures and high winds. This is the most difficult to protect against. For strawberries, two layers of floating row covers may be the most effective strategy for advective freezes. Double covers have been shown to be more effective than single heavy covers in this case. Irrigation along with double covers can provide even more protection if done properly.

Radiational freezes occur on cold, still nights. In this case cold air is near the ground and warmer air is above. Wind machines and helicopters have been successfully used to stir the air and raise the temperatures in orchards in this case. Row covers in strawberries will protect against radiational freezes too.

Irrigation has also been successfully used for frost protection but it has to be done properly. How irrigation works is that as ice forms on plants heat is released. The key is to keep ice formation occurring through the night and continue through melt in the morning. Remember that initially, until ice starts forming, there will actually be evaporative cooling of the plant. The latent heat of fusion (water freezing) will release heat (approximately 144 BTUs/lb of water), whereas evaporative cooling will absorb

heat from the plant (absorbing approximately 1,044 BTUs/lb of water) and lower plant temperatures. Therefore, irrigation must start well above critical temperatures. Also, the volume of water needed needs to be matched with the expected temperature drop and wind speed. In addition, uniformity of water application is critical. This is difficult to do in high wind situations.

Assessing Freeze Damage in Fruit

– *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

On Wednesday, April 6, I evaluated a mixed orchard for damage from several freeze events below 25 over the last 3 weeks. Apricots and Pluots were in the post bloom stage and had greater than 90% loss. Plums were also in the post bloom stage and while significant freeze losses of 50% or more are evident, final fruit load is still uncertain. Peaches and nectarines have severe losses but because they flower at very high numbers, final fruit load is still uncertain; however, the early flowering peaches and nectarines that were inspected showed the most damage and are expected to have very light fruit loads or no fruit. All early flowers on cherries were killed. Asian pears in bloom had over 70% losses (see photo below). Apples are pre- bloom and damage is expected to be low.

Freeze damaged Asian pear flowers. Note the black centers of flowers that have been killed by freezing.

Flowers and young fruit that are dead will be discolored (yellow, brown, black) or shriveled and often will pull off easily from the tree. Viable flowers and fruit will have green ovaries inside and out. You may have to cut open the ovaries with a razor blade to see if they have been damaged.

Choosing Blueberry Varieties for Delmarva

– *Emmalea Ernest, Associate Scientist - Vegetable Crops*; emmalea@udel.edu and *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

Highbush blueberries are long-lived and costly to establish, so choosing the right variety is an important decision with long term impact on the success and profitability of a planting. Many standard blueberry varieties that have been used in commercial production for decades should still be considered for use in new plantings. There are also several active blueberry breeding programs that have released new varieties in recent years, adding to the number of varieties available to growers.

The Mid-Atlantic Berry Guide contains descriptions of many of the available northern highbush blueberry varieties, including disease resistance information. At the University of Delaware research farm in Georgetown we established a highbush blueberry variety trial in 2011. We have also worked with Hail Bennett to evaluate a variety trial established at the same time at Bennett Orchards in Frankford, Delaware. Both trials include mostly newly released varieties that have not yet been well tested. Commentary on the varieties included in these trials is provided below.

The UD trial at Georgetown includes some southern highbush varieties, as well as northern highbush varieties. Southern highbush blueberry varieties were developed from crosses between northern highbush blueberry (*Vaccinium corymbosum*) and one or more of six related southern blueberry species including Darrow's evergreen blueberry (*V. darrowii)* and rabbiteye blueberry (*V. virgatum*). Southern highbush varieties tend to be more heat tolerant and adaptable to a wider range of soil conditions. Some southern highbush varieties also have

reduced chilling requirements, which means that they do not need as much cold during dormancy in order to induce flowering. This is necessary for production in some parts of the South with shorter periods of winter weather, but is a liability in the Mid-Atlantic, where plants may come out of dormancy to early, and be susceptible to freeze damage.

The southern highbush varieties in the Georgetown trial are, in general, very vigorous in their growth, compared to the northern highbush varieties. We have not observed freeze damage to vegetative growth in the southern highbush varieties, but some have had freeze damage to flower buds in some years.

When choosing blueberry varieties it is important to consider various traits in light of your goals for production:

Ripening Time: In Delaware, it is possible to have blueberries ripening from mid-June through August by planting varieties that ripen at different times. Consider when you want to have blueberries available when you choose varieties and how they overlap. For extended direct market sales, as many as eight varieties may be necessary to have continuous supplies. First harvest dates and peak harvest dates for the varieties from the Delaware trials are in Table 1.

Table 1. Maturity of Varieties in the Georgetown Variety Trial in 2015

Variety	1st Harvest	Peak Harvest
Reka	11-Jun	15-Jun
Star	11-Jun	15-Jun
Reville	11-Jun	15-Jun
Hannah's Choice	11-Jun	15-Jun
Sweetheart	11-Jun	15-Jun
Toro	15-Jun	22-Jun
Draper	15-Jun	22-Jun
Bluecrop	11-Jun	22-Jun
Misty	15-Jun	22-Jun
Jubilee	11-Jun	22-Jun
Arlen	11-Jun	22-Jun
Lenoir	15-Jun	22-Jun
Bluegold	15-Jun	30-Jun
Darrow	15-Jun	30-Jun
Legacy	15-Jun	30-Jun
Bonus	15-Jun	30-Jun
Chandler	22-Jun	13-Jul
Liberty	22-Jun	13-Jul
Nelson*	1-Jul	unknown
Aurora	2-Jul	28-Jul

* Data from trial at Bennett Orchards.

***Berry Size*:** Varieties that produce larger berries may be desirable for U-pick operations. Very small berries are not desirable for handpicking and take more labor to pick.

***Concentration of Ripening*:** Some varieties have been developed to ripen most of the fruit at one time to accommodate machine harvest, others ripen fruit over several weeks. Varieties that ripen over a long period will give you a long harvest window out of one planting. However, even if hand-picking, a short harvest period can be helpful from a pest management standpoint because herbicide sprays may be applied in a more timely way in blocks that are past harvest, and the number of sprays for diseases and insects that must be planned around the harvest period is reduced. More concentrated ripening also reduces labor for picking.

***Plant Vigor/Adaptability*:** Blueberries are adapted to an unusual set of environmental conditions (acidic soil with high organic matter that is well drained but moist). Some varieties are more adaptable to soils that do not meet these requirements (i.e. heavy clay soils, dryer conditions) than others. If it will be hard for you to replicate the ideal blueberry soil environment on your site, choose varieties noted for their broad adaptability.

***Flavor*:** There is a good deal of variability in flavor between varieties. Some varieties have an "earthy" (dirt!) flavor that is unappetizing to most folks, others, sometimes described as "mild", tend to have little flavor. If you are direct marketing, flavor will be a prime concern. If you are wholesaling, choose varieties on a combination of yield and flavor, poor flavor types reduce consumer demand.

Recommended Varieties from the Delaware Trials at Georgetown & Frankford

Reka – Early ripening, northern highbush variety with good yields in 2013-15, and early fruiting. Berry size is medium to small. Flavor is good but tart. Berries are dark blue, almost black.

Chandler – Northern highbush variety with moderate yield in 2013-15. Berry size is very large and flavor is good. Ripens later in the season and over a long period. Plant tends toward woody growth and does not produce many shoots from the ground. Upright habit and large berry size could be desirable for pick-your-own.

Aurora – Northern highbush variety with moderate yields in 2013-14 and high yield in 2015. Berry size is medium to large. Matures late with peak harvest at the end of July and picking into August.

Legacy – Northern/Southern highbush variety with good yields in 2013-15. Berry size is medium with good flavor. Late main season maturity. Legacy has southern highbush in its pedigree, but we have not seen freeze damage to flower buds.

Bluecrop – Northern highbush variety with moderate yields in 2013-15. This is a widely planted standard variety with good (familiar) blueberry flavor. Berries are medium in size. Easy and fast to prune. Early main season maturity.

Jubilee – Southern highbush variety with good yields in 2013-15. Berries are medium to small with good flavor. We have not noted significant freeze damage to this variety and it is very vigorous. The only drawback of this variety is the tendency toward small berry size. Early main season maturity.

Lenoir – Southern highbush variety with moderate yields in 2013 and 2014 and high yield in 2015. Berries are medium-sized with excellent flavor. This variety grows vigorously and we have not observed any freeze damage to flower buds in any of the years we have tested it. Main season maturity.

Nelson – Northern highbush variety that was planted only at the Frankford site. It was one of the best yielding varieties in that trial. Late mid-season maturity.

Recommended with Reservations

Bluegold – Northern highbush variety with good yields in 2013 and 2015 but low yield in 2014. Medium size berry with good flavor. Tends to produce many short shoots, and over-flower. Requires lots of detail pruning to maintain berry size and limit overproduction. Main season maturity.

Darrow – Northern highbush variety with good yields in 2013-15. Berry size is very large. Flavor is questionable. Late main season maturity.

Draper – Northern highbush variety with moderate yields in 2013-15. Berries are large with good flavor. Plants seem well adapted and vigorous but yields are not especially high. Early main season maturity.

Misty – Southern highbush variety with good yields in 2013-15. Berries are medium to small with good flavor. Berries have a lot of bloom and are light in color. We have seen some freeze damage on this variety each year, which is concerning, but it has not resulted in low yields. The plant grows very vigorously. Early main season maturity.

Not Recommended

Toro – Northern highbush variety with good yields in 2013 and 2014 but declining plant health and yields in 2015. Berry size is large. Plant tends toward woody growth like Chandler but maybe not as vigorous. Main season maturity.

Liberty – Northern highbush variety with low yields in 2013-15. Late maturing, similar to Aurora, but Aurora is later, higher yielding and more vigorous.

Bonus – Northern highbush variety with low yields in 2013-15. Berry size is very large. Plants have not established well at the Georgetown site. Early main season maturity.

Star – Southern highbush variety with low yields in 2013 and 2014 and moderate yields in 2015. Berries are large with excellent flavor. This is a very nice variety but we have observed freeze damage to flower buds each year which results in yield loss. Early maturing.

Arlen – Southern highbush variety with low yields in 2013-15. Berries are very large with good flavor. This variety has suffered significant yield loss from freeze damage to flower buds each year. Main season maturity.

There are several varieties that were added to the trial after 2011, and we do not yet have enough data on them to make recommendations. They are:

Southern Highbush	***Northern Highbush***
New Hanover	Hannah's Choice
Pamlico	Sweetheart
Beaufort	Chanticleer
Reville	
GeorgiaGem	
O'Neal	

Agronomic Crops

Agronomic Crop Insect Management – *Joanne Whalen, Extension IPM Specialist*; jwhalen@udel.edu

Alfalfa

Fields should be sampled for both for pea aphid and alfalfa weevil. When sampling for aphids and weevils, collect a minimum of 30 random stems throughout a field and place them top first in a white bucket. For aphids, count the number present per plant as well as any that have dislodged from the stem into the bucket. As a general guideline, you should consider a treatment in alfalfa less than 10 inches tall if you find 40-50 aphids per stem. The treatment threshold for alfalfa 10 inches or taller in height is 75-100 per stem. Although beneficial insects can help to crash aphid populations, cool temperatures will slow beneficial insect activity. As a general rule, you need one beneficial insect per every 50-100 aphids to help crash populations. For alfalfa weevil, you will want to record the number of weevil larvae per stem. The following thresholds, based on the height of the alfalfa, should be used as a guideline when making a treatment decision: up to 11 inches tall – 0.7 per stem; 12 inches tall – 1.0 per stem; 13 to 15 inches tall – 1.5 per stem; 16 inches tall – 2.0 per stem and 17 to 18 inches tall – 2.5 per stem. Information on treatment thresholds and options for insect management in alfalfa can be found at the following link:

https://cdn.extension.udel.edu/wp-content/uploads/2012/05/31152336/InsectControlinAlfalfa2016.pdf

Field Corn

As we approach planting time for most fields (as well as possible emergence of early planted fields), I have received questions this past week about management options for cutworms. As far as cutworm management, the following link from the University of Tennessee's Crop News Blog provides a good review of cutworm management in corn using at-planting technologies: (http://news.utcrops.com/2016/03/cutworms-corn-furrow-insecticides/). Factors that favor black cutworm outbreaks include late planting, heavy infestations of winter annual weeds before tillage and planting, reduced tillage, and corn panted into soybean stubble. Fields with a combination of these factors are more attractive to migrating moths and are likely candidates for egg laying. Even if an at-planting management technology was used, these fields should be monitored closely as corn emerges. Young larvae will feed on plants, resulting in small, irregular shaped holes. Black cutworms generally begin cutting plants at the fourth instar. One cutworm larvae can cut an average of three to four plants during its lifetime. In recent years and in variable locations throughout the state, we also find other cutworm species damaging very early emerging corn. In most cases, this damage is caused by the clay backed cutworm or the dingy cutworm. These species overwinter as half-grown larvae in the soil so they can get a "jump" on black cutworms. Regardless of species, a rescue treatment should considered in 1-2 leaf stage corn if you can find plants with 10% leaf feeding or 3% cut plants and larvae are present. At the 2 to 4-leaf stage, a treatment should be considered when you find 5% of the plants cut and larvae are present. Information on treatment thresholds and options for insect management in field corn can be found at the following link:

https://cdn.extension.udel.edu/wp-content/uploads/2012/05/21080802/Insect-Management-In-Field-Corn-2016.pdf

During the past week, I have also received calls about the availability of Avipel Hopper Box (dry) Corn Seed Treatment as a bird management option on field corn. This is a Special Local Needs Label (Section 24(c)) that is still available in Delaware for the 2016 season and expires on July 1, 2016. A copy of the 24(c) label must be in

your possession to use this product. In past years, the 24(c) label and use directions were on the pesticide canister. However, if this is not case you will need to contact Chris Wade at the Delaware Department of Agriculture for a copy of the label and/or for additional questions (Christopher.wade@state.de.us.)

Lastly, to help you keep track of Bt corn traits, efficacy, and refuge requirements for the 2016 season, Chris DiFonzo, Field Crops Entomologist from Michigan State University, has once again updated the Handy BT Corn Trait Table.

http://msuent.com/assets/pdf/28BtTraitTable2016.pdf

Soybeans
As part of an Extension IPM project titled "Incorporating a Total Crop Management Approach into Current Soybean Integrated Pest Management (IPM) Programs ", we are looking at evaluating and demonstrating the role of small grain cover crops in weed management, slug management and maintenance/improvement of soil health. Reports from the 2014 and 2015 seasons can be found at:

http://cdn.extension.udel.edu/wp-content/uploads/2015/10/12143536/Soybean-IPM-With-CoverCrops-2014-Final-Report.pdf

and

https://cdn.extension.udel.edu/wp-content/uploads/2015/10/12143536/Incorporating-a-Total-Crop-Management-Approach-into-Current-Soybean-IPM-Programs-Report1.pdf

During our sampling for slugs in no-till fields using shingle traps last fall and this spring, we observed low to moderate levels of adult marsh and grey garden slugs. Although slugs were found under shingle traps in fields with and without cover crops, the fields with cover crops generally had higher numbers. In addition to using shingle traps, scouting for eggs and watching for egg hatch can help identify potential problem fields. More information on scouting for slug eggs can be found at the following link from Ohio State University:

http://presenter.cfaes.ohio-state.edu/hammond.5/Slugs_on_Field_Crops_-_Web_%28800x600%29_-_20091222_04.03.14PM.html

Small Grains
As we see a return to warmer temperatures, be sure to scout fields on a weekly basis for cereal leaf beetles. Low levels of adult beetles and eggs continue to be found in fields throughout the state. The following link from North Carolina provides information on tank mixing insecticides with your nitrogen application in 2016:

https://smallgrains.ces.ncsu.edu/2016/03/watch-for-cereal-leaf-beetle-especially-if-you-tank-mixed-insecticide-with-nitrogen/

Information on treatment thresholds and options for insect management in small grains can be found at the following link:

https://cdn.extension.udel.edu/wp-content/uploads/2012/05/31152336/Insect-Control-in-Small-Grains2016.pdf

Are You Chasing That Proverbial Last Penny?

- *Richard Taylor, Extension Agronomy Specialist;* rtaylor@udel.edu

While visiting in Louisiana last week following some devastating flooding in central and western Louisiana, I found myself wondering, "How widespread is the notion that a successful grower needs to do everything possible to earn the last penny possible from his or her crop?" Driving through areas of Louisiana from which the flood waters had barely receded, I was saddened to see growers already replanting their corn crops on ground that was still wet enough to be at risk for compaction from the heavy machinery. I heard that many growers were having to buy whatever corn seed was left in the distributor's warehouse since they already had used up all available seed of the most desirable hybrids. Combining lower yield potential hybrids with heavy no-till planters on wet soil and with subsequent compaction issues just to have a crop in the field raised questions about profitability in my mind. As it turned out, my fears were more than justified since three days after I observed the frantic planting efforts another stalled low pressure system and front flooded the newly planted fields once again.

As we all get anxious about the planting window here on Delmarva and winter sends another cold blast our way that will keep soil temperatures low, I thought I would ask that each grower take a moment to review their 2016 management and spending plans to ensure that they aren't chasing that last penny of profit. I remember Dr. Allan Bandel from the University of Maryland talking about the need to have each dollar spent on inputs return, or at least have the potential to return, four dollars in revenue to justify spending a dollar. Of course, Dr. Bandel was thinking of non-irrigated corn. This was back when dryland corn yields averaged 90 to 120 bushels per acre. With irrigated corn acreage substantially higher in 2016 and corn yield potential both for irrigated and non-irrigated corn much higher than it was in the 1980s, the four dollar return for the last dollar spent on an input is now outdated. Still, I would suggest that even those producers that grow only irrigated corn, the level of production risk (corn knocked down by a late-summer hurricane, green snap from straight-line winds during the rapid growth stage, hail injury from summer thunderstorms, and a range of other potential yield limiting events) is still great enough that **the last dollar spent on inputs should at least potentially return two dollars in income to justify the money spent**.

With corn yield potential ever climbing, there are more and more miracle products available to growers that will add that little extra yield which will improve their profitability. In almost all cases, these miracle products have scant research to back their claims and what research that might exist often is the result of the company hiring someone to do the 'research'. As you wait for the soil temperature to warm enough to justify planting corn, please take time to look over your planned input costs to be sure they all are justified and that they merit the money you plan to spend knowing that there is a level of risk that must be taken into account.

Small Grain Disease Update – *Nathan Kleczewski, Extension Specialist – Plant Pathology*; nkleczew@udel.edu

Cool to cold temperatures persist, which has squashed most disease progress in small grains. Most wheat is around Feekes 6-7 in many parts of the Delaware, and some barley is at boot or early head emergence. In wheat, diseases are scarce or nearly absent in many fields. Powdery mildew is still observed in some fields, mostly at low levels, and recent freezes should significantly push back the disease. Some subtle virus symptoms are out there at very low levels in some fields.

In barley you will see net blotch or the spot form of net blotch to some degree (Figure 1). Without using molecular tools, there is no way of distinguishing the two, but for our purposes we can treat them the same. Symptoms are jet black circular blotches to elongated, cross-hatched blotches. This is another disease that can be residue-borne, persisting in residues of barley and volunteer barley. No-till fields with high levels of residue therefore, will show greater symptoms. Contaminated seed is another source of the disease. Disease progresses when it is very wet and temperatures fall between 60-80° F. Planting barley early can exacerbate the disease in young plants, as it allows the pathogen to establish and damage germinating seedlings. Rotation, encouraging residue decomposition via disking, and planting clean seed are the best means of managing this disease. In areas where continuous small grain production is used (Western US, UK) this disease can cause some significant damage. Here it is more of an annoyance. However, if anyone is considering looking into malting winter barley in the future this disease should be on your radar. We also will need to be able to distinguish the spot from net blotch forms as there is no good resistance for the spot blotch form, but some good resistance sources for the net blotch form. We are working on generating some of that preliminary data this season.

Also, you may see some frost damage in barley as heads emerge, particularly in fields that were far along. Time will tell.

Figure 1. Net blotch of barley.

As far as scouting wheat, make sure to see where you are at disease-wise in wheat at flag leaf emergence (Feekes 8-9). There are reports of stripe rust and common leaf rust in North Carolina and Tennessee, and recent weather patterns may have started to move spores closer to areas of Maryland and Delaware. Stripe rust is a beast at cooler temperatures, whereas leaf rust tends to be more of a warm weather disease. Stripe rust does not always form stripes (Figure 2). However, the spore color is significantly different from common rust. Common rust pustules are brown to red brown, whereas stripe rust pustules are yellow to orange. Make sure you are scouting your fields, because you do not want to be stuck playing catch up to stripe rust in a susceptible variety.

Figure 2. Typical stripe rust symptoms on wheat foliage.

Expect to see symptoms of barley yellow dwarf in some barley and wheat fields. We have observed putative BYDV symptoms indicative of Fall infection at very low levels in some fields. Typically, characteristic symptoms appear after the flag leaf emerges, particularly if temperatures are cool and sunny. In barley you may see bright yellow flag leaves that can become puckered to necrotic, and in wheat flag leaves may have a purplish to orange appearance. BYDV follows patterns of infected aphids, so it often occurs in small patches or areas of the field. Plants can also be stunted, particularly at the center of these patches. Seldom are severe BYDV issues detected in Delaware and Maryland, but issues can occur from time to time. This virus is a big deal in southern areas where temperatures remain warmer for longer and out west where large areas of pasture exist for grazing by cattle, etc. The result is greater populations of aphids coupled with more potential sources of overwintering virus. The other piece is that we historically see the moderate/mild strains of the virus, so even if you see symptoms, the likelihood for any significant yield hit is low. Bottom line: know that the infection occurred long ago, and that you cannot fix infected plants. If you have areas that tend to seem to be hot spots for BYDV, avoid planting early and select varieties rated excellent for BYDV in the Virginia Tech small grains guide.

Odds and Ends on Cover Crops – *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

If you have wanted to kill your cover crops before now and have not had a chance, you may want to evaluate the stand and consider letting it go a little longer. The benefits of cover crops can increase the longer it is allowed to grow, however there are a few things to consider. If it's not a very thick stand and there are a lot of weeds in the field, some of the weed species may be more difficult to kill if they are allowed to mature. If the stand is thick and you are considering if you should let it grow longer, you have to decide if your planter can cut through the cover crop, properly place the seed, and close the seed furrow. You will also have to evaluate your cover crop in light of altering your fertility program. If you have a lot of rye (or all

rye) the cover crop could tie up a lot of your nitrogen. For soybeans that may not be an issue, but for non-legumes the crop may not have as much available nitrogen as it needs. You may need to apply additional nitrogen.

Allowing the cover crop to grow longer will:

• allow roots to grow deeper and wider, thus reducing compaction in the soils

• the additional root growth may mellow the soil and allow for easier planting

• improve soil moisture retention, by reducing evaporation; and the more biomass the better moisture retention

• the greater the cover crop biomass, the better weed suppression it provides (and the longer into the season the residue can provide weed suppression)

Cover crops are growing rapidly at this time of year and the amount of biomass can change dramatically in 7 to 10 days. I recommend planting into a dead cover crop. Planting into a sprayed cover crop before it has completely died can be troublesome, so don't rush it and allow the cover crop to die. I know some growers are planting their grain crops and then spraying after planting, but this strategy can be challenging. I would not recommend planting into a living cover crop the first time someone decides to allow their cover crops to grow longer.

Cereal cover crops (rye, wheat, barley, triticale) have been controlled consistently with glyphosate. But legumes and brassica species are often not killed with glyphosate and they require special consideration for killing them. Thus, allowing time for the cover crop to die before planting is also a safety net to ensure your burndown sprays will kill them. Otherwise, an additional strategy maybe need to successfully kill the cover.

The weather this spring has not been good for spraying and so there may be a chance to experiment with allowing your cover crop to grow a little longer. Just be sure to consider all the factors and start with an area that is manageable.

New Mid-Atlantic Field Crop Weed Management Guide – *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

There is a new "Mid-Atlantic Field Crop Weed Management Guide" developed by weed specialist from Penn State, Univ. of Delaware, Univ. of Maryland, Virginia Tech, and West Virginia Univ. The 240-page guide covers corn, sorghum, soybean, small grains, and hay and pastures. The guides 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. There are tables on premixes and what is included in the premixes, and a section on management of problem weeds. The guide is available in the Delaware county offices for $15 or can be ordered on-line at http://extension.psu.edu/publications/agrs136. Available on-line are the printed copies for $20 + shipping; an enhanced pdf copy for use on computers and tablets for $10 or both a hard copy and pdf for $25 + shipping. 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".

General

Free Herbicide Site of Action Chart – *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

Using herbicides with different sites of action is important to deal with herbicide resistant weeds, but knowing sites of action can be challenging. A colorful reference chart on herbicide site of action is available free of charge at the Delaware Cooperative Extension offices. This chart is specific for common herbicides used in the Mid-Atlantic States for agronomic and vegetable crops.

The Mid-Atlantic chart was customized from one developed for the Mid-West States and designed it collaboration with the Delaware Soybean Board and the US Soybean Board. It is part of the US Soybean Board's "Take Action: herbicide-resistance management" campaign.

Announcements

Free Webinars in April, Sponsored by the Mid-Atlantic Women in Agriculture

4/13: Deciding on a Business Structure - Business structures can often be one of the simplest tools producers can utilize to limit their business liability. At the same time, they often confuse those considering adopting one as a tool to utilize in their business. This webinar will cover business structures from the simplest (sole proprietorship) to the most complex (corporation and cooperative) to better help producers understand how to utilize them in their operations. Speakers will be Ashley Ellixson and Paul Goeringer, both Extension Legal Specialists with the Department of Agricultural and Resource Economics and partners with the Ag Law Education Initiative.

4/27: Soil pH, Liming Rates and Fertility - Soil pH is only one number on a soil test report, but can control a lot of your production potential. To maximize your returns from the soil, understanding where soil acidity comes from and how we determine lime rates is essential.

To register:
http://www.eventbrite.com/e/wednesday-webinars-registration-11452674257

Webinars begin at noon EST. Duration is approximately 1 hour. For optimal performance we suggest using Internet Explorer as your web browser and connecting via Ethernet connection instead of wireless (wireless will work, but a hard line is more stable)

See website for more information and other upcoming topics: https://extension.umd.edu/womeninag/webinars

If you do not have access to high speed internet and would like to participate in one of the above webinars, contact Tracy Wootten at wootten@udel.edu.

2016 Horticulture Short Courses

For the complete list of 2016 courses go to:
http://extension.udel.edu/lawngarden/commercial-horticulture/2016-horticulture-short-courses/

Tree Identification Walk
April 19 4:30-6 p.m. **NEW DATE**
Delaware State University Campus
1200 North DuPont Highway, Dover, DE Washington Building near the Herbarium (additional details will be provided following registration)

Cost: $15
Credits: 1 Pest., 2 ISA, 1 CNP
Come prepared to walk around the Delaware State University TREE CAMPUS USA - Arboretum as we exam the growing characteristics of nearly 178 different tree/shrub species (*of which 70 are native to Delaware*) established at this location. Discover common insect and disease issues found in the urban landscape. Instructors: Dot Abbott and Megan Pleasanton

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

Mobile Refrigeration Workshop

April 13, 2016 9:30 a.m. – 2:00 p.m.
DSU Outreach & Research Center
884 Smyrna-Leipsic Rd., Smyrna, DE

Guest Speaker:

Dr. Penelope Perkins-Veazie
Fruit Physiologist and Professor at North Carolina State University

Topics include:

• Post-harvest fruit physiology and fruit quality

• Demonstration of mobile, walk-in refrigeration unit and building costs

For more information about the "Pack 'N Cool" refrigerated trailer go to:
https://plantsforhumanhealth.ncsu.edu/producer-resources/

This workshop is free, but please preregister.

For more information, to register or for assistance due to disabilities, contact:
Lekha Paudel: 302-857-7796; Lnpaudel@desu.edu

This workshop is supported through USDA-NIFA Capacity Building Grant funds.

Farm Succession Planning Education Series

Financial Planning: Creating a Retirement Paycheck

Thursday, May 5, 2016 7:00 - 9:00 p.m.
University of Delaware Paradee Center
169 Transportation Circle, Dover, 19901

If you're pre-retirement and planning for your retirement, this session will help you learn how to calculate what you will need, provide some strategies for using your savings assets to create a "retirement paycheck", and offer resources to assist you in your planning. It's never too late...or early, to start!

Please RSVP by calling (302) 831-2506 by May 2.

For more information, contact Extension agents, Dan Severson at severson@udel.edu or 302-831-8860 or Laurie Wolinski at lgw@udel.edu or 302-831-2538.

Season Extension Workshop and Field Day

Friday May, 20, 2016 10:00 a.m. - 3:30 p.m.
Delaware State University
Smyrna Outreach & Research Center (SORC)
884 Smyrna-Leipsic Road, Smyrna, DE

RSVP by May, 13, 2016. To register for the free workshop or for more information, call Rose Ogutu at (302) 587-6397 or email rogutu@desu.edu

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Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of March 31 to April 6, 2016

Readings Taken from Midnight to Midnight

Rainfall:

0.63 inch: April 1
0.89 inch: April 2
0.09 inch: April 3
0.20 inch: April 4

Air Temperature:

Highs ranged from 77°F on April 1 to 46°F on April 5.

Lows ranged from 66°F on April 1 to 24°F on April 6.

Soil Temperature:

55.0°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