Figure 1. Apothecia, small mushroom-like structures of the white mold fungus that give rise to spores, which infect soybean flowers. Note the small pale orange structures to the right of the dime.

The week of Independence day is here and we are all looking forward to fireworks, festivities, and time with friends and family. This first week of July also brings us a heightened awareness of white mold in soybeans and its management. In 2017 we had one of the most epic white mold epidemics on record. Many high-yielding soybean fields in the state were slammed with white mold, resulting in some serious yield losses in many fields around Wisconsin. I have been asked many times this season, “Are we in for white mold as bad as 2017?” The short answer is no, I don’t think so.

Weather in 2017 was incredibly cool for the majority of the time. This had two effects which were responsible for the extreme white mold epidemic in 2017. First, soybeans moved extremely slow through each growth stage. This meant that the flowering window went on for about twice as long as normal for many of the varieties of soybeans we grow here in Wisconsin. This extended flowering period resulted in an extended period of time that soybeans were susceptible to infection. Remember that the white mold fungus infects soybeans through open and senescing flower, by spores that are born from small mushroom-like structures called apothecia (Fig. 1). This extended bloom period meant that the window of opportunity for the fungus was also extended. Couple this with the fact that those same cool conditions were also optimal for the fungus to infect and grow. It was a
double whammy in 2017.

In 2018, the season has already seen several instances of 2 or 3 day durations of high temperatures of 90F or above. This has done a couple of things. It has pushed the soybean crop very quickly this year. I estimate that the crop is about 2 weeks ahead of last season, in the southern and south-central region of Wisconsin. With continued stretches of warm weather in the forecast, I expect flowering duration to be closer to ‘normal’, or at least shorter than last season. This means the crop won’t be subjected to such a long period of susceptibility, compared to 2017. Furthermore, these stretches of high temperatures of 90F or above should make conditions somewhat less conducive for the fungus. With that said, we need to pay attention to weather as we have had plenty of rain and humidity, which can be favorable for white mold. So will we have white mold in Wisconsin in 2018? Yes. Will it be has significant as 2017, I hope not.

Figure 2. White mold predictions for rain-fed (non-irrigated) fields for June 30, 2018. Blue indicates low risk, yellow medium risk, and red indicates high risk of infection for flowering soybeans.

Predicting White Mold

The flowering growth stages are a critical time to manage white mold in-season. You can view a fact sheet and video on the subject. As you probably know, timing in-season fungicide sprays at the correct time during the soybean bloom period can be extremely difficult. To help solve this decision-making issue, models were developed at the University of Wisconsin-Madison in conjunction with Michigan State University and Iowa State University to identify at-risk regions which have been experiencing weather favorable for the development of white mold apothecia. These models predict when apothecia will be present in the field using combinations of 30-day averages of maximum temperature, relative humidity, and wind speed. Using virtually available weather data, predictions can be made in most soybean growing regions. In past years we have overlaid model outputs onto maps to achieve a landscape view of the current risk. An example of a current map for this season is in figure 2. You can see we have some areas of favorable weather for white mold risk. However, more precise predictions would help determine the site-specific risk. To facilitate more precise predictions, we have launched the Sporecaster smartphone application for Android and iPhone for the 2018 season.

The purpose of the app is to assist farmers in making early season management decisions for white mold in soybean. The best time to spray fungicides for white mold is during flowering (R1 and R3 growth stages) when apothecia are present on the soil surface.

Sporecaster uses university research to turn a few simple taps on a smartphone screen into an instant forecast of the risk of apothecia being present in a soybean field, which helps growers predict the best timing for white mold treatment during the flowering period.

University research has indicated that the appearance of apothecia can be predicted using weather data and a threshold of percent soybean canopy row closure in a field. Based on these predictions and crop phenology, site-specific risk values are generated for three scenarios (non-irrigated soybeans, soybeans planted on 15- row-spacing and irrigated, or soybeans planted on 30-row-spacing and irrigated). Though not specifically tested we would expect row-spacings of 22 inches or less to have a similar probability response to fungicide as the 15 inch row-spacing.

The Sclerotinia apothecial models that underlie the Sporecaster prediction tool have undergone significant validation in both small test plots and in commercial production fields. In 2017, efficacy trials were conducted at agricultural research stations in Iowa, Michigan, and Wisconsin to identify fungicide application programs and thresholds for model implementation. Additionally, apothecial scouting and disease monitoring were conducted in a total of 60 commercial farmer fields in Michigan, Nebraska, and Wisconsin between 2016 and 2017 to evaluate model accuracy across the growing region. Across all irrigated and non-irrigated locations predictions during the soybean flowering period (R1 to early R4 growth stages) were found to explain end-of-season disease observations with an accuracy of 81.8% using the established probability thresholds now programmed in the app.

Click here to download the Android version of Sporecaster.

Click here to download the iPhone version of Sporecaster.

Here is a helpful video if you would like some tips on how to use Sporecaster. If you would like some advice on how to interpret the output, we have created an addi-
If you have decided to spray soybeans for white mold, what are the best products to use? Over the last several years we have run numerous fungicide efficacy trials in Wisconsin and in conjunction with researchers in other states. In Wisconsin, we have observed that Endura applied at 8 oz at the R1 growth stage performs well. We have also observed that the fungicide Aproach applied at 9 fl oz at R1 and again at R3 also performs comparably to the Endura treatment. Other fungicide options also include Omega and Proline. You can view results of past fungicide evaluations by CLICKING HERE.

Some Other Resources

For some other ideas on how to manage white mold you can visit this recent article.

To find out how Xtend varieties respond against white mold, CLICK HERE.

To watch an in-depth video on white mold management, CLICK HERE.

References


Maintaining soil fertility is important not only for profitable crop production, but also soil health. In a long-term P and K fertility trial, we can see that there is much greater residue cover in plots that have received adequate potash applications over time compared to where no K was applied. Application of P had minimal to no effect on residue cover. The effect of P and K application on residue cover is not surprising because it mimics yield response to applied nutrients. Even though soil test P levels are low in the unfertilized plots, there has been minimal yield increases to applied P in both corn and soybean over the years. In contrast, we have observed very large yield increases (30 bu/a soybean, 200 bu/a corn) with K application.

Residue cover protects the soil surface from crusting which subsequently reduces the potential for soil erosion. In the photos above, plots with poor K fertility have little residue cover, even though the previous crop was corn for grain. Surface crusting is apparent in these plots. Plots with adequate K fertility have more residue cover, protecting the soil particles from detaching and forming surface crusts. Surface crusting reduces water infiltration and can result in sheet erosion. Crusts can also reduce infiltration of surface applied liquid manure. Maintaining soil fertility and keeping soil in the field are key components of healthy soils.

For more information about the yield responses to P and K, watch this video.

To read this post on their blog, click here.
Pea Aphids: Where did they come from?

Bryan Jensen, Dept. of Entomology and IPM Program

After several calls this week along with my own observations it is clear that pea aphids populations in alfalfa fields are much higher than normal. In some cases, that is an understatement.

Why are their populations so high? Do I need to be concerned? The first question is the easy one. Given suitable environmental conditions, pea aphids populations can increase exponentially by themselves. Without help from anyone or anything. No surprise there and yet another reason to be frustrated with some of the unseasonably cool weather. There is an old adage that hard driving rain can wash aphids off the plant. The important word to ponder in that sentence is “can”. Although driving rains can, they certainly have not in most cases this year.

Another commonality for some of the high aphid populations (but not all) has been the earlier use of an insecticide. Most of our insecticides are broad spectrum and will kill beneficial insects. Their populations will not rebound as quickly as aphids. Therefore, high pea population can result. I have seen that happen several times in small research trials as well as in normal field situations. Combine the lack of beneficial insects along with weather that is conducive to aphids and you can make matters worse. Don’t get me wrong. When you are over threshold you need to do something. But throwing an insecticide in because it is inexpensive or because you think you might need it can create problems on down the road.

Now to discuss the difficult question. Do I need to be concerned? The easy answer is maybe. Pea aphids are considered an occasional pest and have a long established threshold of 100/sweep. Some of the consultants indicated that fields are to be cut soon so their current problem will solve itself. Cutting an established alfalfa stands leaves almost no green alfalfa tissue which aphids need to survive. Therefore, a significant majority of aphids will be killed. Cutting essentially resets the biological clock for that field. The lack of food along with the predicted hot and dry weather would make me think there would be few worries in the next cutting. But it is anyone’s guess if the cool weather trend continues???

Also, keep in mind if that alfalfa is to be used in a dairy ration that clock reset every 30+ days.

Based on past experience, I personally think that the established threshold of 100 aphids/sweep is on the conservative side. If that alfalfa field has other stresses (diseases, drought, etc.) then use the established thresh-

old. However, under good growing conditions with few, if any stresses, I think that threshold could be raised without economic loss for either yield or quality.

A bigger concern right now is new seedings. Fortunately, some of the new seeds are being cut now. But unfortu-

nately there is usually some green leaf tissue in the stubble that can support pea aphids (and potato leafhoppers). This is where the hot temperatures can come into play and keep the aphid populations in check. But perhaps drive the potato leafhopper populations up. Again, that is all dependent on weather. Sweep to be sure.

“Ball” of pea aphids and other insects

Green and rose color pea aphids and immature lady-bird beetle with a “happy meal”
Fusarium Head Blight: What To Do As You Prepare For Wheat Harvest

Damon L. Smith, Extension Field Crops Pathologist, University of Wisconsin-Madison; Shawn P. Conley, Extension Soybean and Small Grains Agronomist, University of Wisconsin-Madison

Figure 1. FHB on some wheat heads. Note the bleached and reddened appearance of infected kernels.

Fusarium head blight (FHB) or scab has been observed in some Wisconsin winter wheat fields this season. Incidence and severity have been variable this season, based on location and susceptibility of the wheat variety. Generally, we have observed more FHB in the southern wheat growing areas of the state, with less FHB as we moved north and east. Visit my previous post for a full report. It is important to scout your maturing wheat crop and consider how much damage from FHB might be in a field as you prepare for harvest. While FHB can cause direct yield loss, the fungus that causes this disease can also produce deoxynivalenol (also known as DON or vomitoxin). Assessing wheat fields now can assist you in determining how much vomitoxin might be expected at harvest. However, it is possible to find high levels of vomitoxin in finished grain, even if FHB levels were low.

Figure 2. Bleached heads caused by Fusarium head blight of winter wheat

What does scab look like? Diseased spikelets on an infected grain head die and bleach prematurely (Fig. 2). Healthy spikelets on the same head retain their normal green color. Over time, premature bleaching of spikelets may progress throughout the entire grain head. If infections occur on the stem immediately below the head, the entire head may die. As symptoms progress, developing grains are colonized causing them to shrink and wrinkle. Often, infected kernels have a rough, sunken appearance, and range in color from pink or soft gray, to light brown. As wheat dries down, visual inspection of heads for scab will become more difficult.

Why is identifying scab important? Scab identification is important, not only because it reduces yield, but also because it reduces the quality and feeding value of grain. In addition, the FHB fungus may produce mycotoxins, including DON or vomitoxin, that when ingested, can adversely affect livestock and human health. The U.S. Food and Drug Administration has set maximum allowable levels of DON in feed for various animal systems, these are as follows: beef and feedlot cattle and poultry < 10ppm; Swine and all other animals < 5ppm.

What should I do to prepare for wheat harvest?

1. Scout your fields now to assess risk. Wheat is maturing rapidly. As maturity progresses it will be increasingly difficult to assess the incidence and severity of the infection. Understanding a field’s risk will help growers either field blend or avoid highly infected areas so entire loads are not rejected.

2. DO NOT spray fungicide now. Research has demonstrated that the window of opportunity to manage FHB with fungicides is at the beginning of anthesis and only lasts about 7 days. Applications later than 7 days after the start of anthesis are not effective in controlling FHB. In addition, most fungicide labels do not allow a pre-harvest interval (PHI) suitable for a late application on wheat. Any application now would be off-label.

3. Adjust combine settings to blow out lighter seeds and chaff. Salgado et al. 2011 indicated that adjusting a combine’s fan speed between 1,375 and 1,475 rmps and shutter opening to 90 mm (3.5 inches) resulted in the lowest discounts that would have been received at the elevator due to low test weight, % damaged kernels, and level of the mycotoxin deoxynivalenol (DON; vomitoxin) present in the harvested grain.

4. Know your elevators inspection and dockage procedure (each elevator can have a different procedure).
5. Scabby kernels does not necessarily mean high DON levels and vice versa. For example, in a 2014 fungicide evaluation very low visible levels of FHB were observed for all treatments. However, when the finished grain was tested for DON, significant levels were identified for all treatments. Be sure to test and know what levels of DON are in your grain even if you didn't see a high level of visible disease. Also, don’t assume that because a fungicide was used, there will be no DON.

6. DON can be present in the straw so there is concern regarding feeding or using scab infected wheat straw. DO NOT use straw for bedding or feed from fields with high levels of scab (Cowger and Arellano, 2013). If in doubt, have the straw tested for DON levels.

7. Do not save seed from a scab-infected field. Fusarium graminearum can be transmitted via seed. Infected seeds will have decreased growth and tillering capacity as well as increased risk for winterkill.

8. Do not store grain from fields with high levels of scab. DON and other mycotoxins can continue to increase in stored grain.

9. Harvest in a timely fashion to minimize elevator discounts and balance dockage due to FHB. Click here to read about some recent research on optimizing harvest timing in winter wheat.

10. For more information on Fusarium head blight click here.

References


To read this article on their blog, click here.

**Growing Winter Wheat Profitably Event**

UW-Extension will host a 'Growing Winter Wheat Profitably' at the Public Events Building of the Arlington Research Station on July 9 from 10am until 2pm.

Winter wheat acreage has decreased in recent years due to dockage at the elevator and low prices. At this workshop, Shawn Conley, UW-Extension Soybean and Small Grain Specialist will share management strategies to maintain yield by selecting the best varieties and optimizing crop management decisions. Damon Smith, UW Field Crops Plant Pathologist will provide tips on how to reduce dockage by managing wheat diseases with a well-timed fungicide program. Brenda Oft, Commodity Broker and Farm Market Consultant for Midwest Market Management will provide strategies to maximize profits with a well-planned marketing strategy.

The program will also feature Jamie Patton and Heidi Johnson, UW-Extension Soil Specialists, and Jeff Gaska, a Dodge County farmer, who will discuss adding winter wheat and cover crops to a corn/soybean rotation to boost rotational profitability by breaking up disease cycles and improving soil health.

The cost of the workshop is $15, which includes lunch and refreshments. To register go online to https://fyi.uwex.edu/danecountyag/events/wheat or call or email Barbara at the Dane County UW-Extension office at 608-224-3704 or nunez.barabara@countyofdane.com

*For more information, see the flyer attached at the end of this pdf.

**Wisconsin Pest Bulletin, Issue No. 9, June 28**

Krista Hamilton, Entomologist, Bureau of Plant Industry/Division of Agricultural Resource Management, Wisconsin Department of Agriculture, Trade and Consumer Protection

Volume 63 Issue No. 9 of the Wisconsin Pest Bulletin is now available at: https://datcpservices.wisconsin.gov/pb/pdf/06-28-18.pdf

INSIDE THIS ISSUE

LOOKING AHEAD: Spotted wing drosophila populations surging

FORAGES & GRAINS: Potato leafhopper counts below-threshold in alfalfa

CORN: Annual western bean cutworm flight underway

SOYBEAN: Surveys continue to find very soybean aphid counts

FRUITS: Apple maggot flies appearing on sticky traps
**VEGETABLES:** Four-lined plant bugs causing problems for gardeners

**NURSERY & FOREST:** Ribes anthracnose and rose chafer found in WI nurseries this week

**DEGREE DAYS:** Growing degree day accumulations as of June 27, 2018

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**Wisconsin Fruit News- Volume 3, Issue 6**

Janet van Zoeren and Christelle Guédot, UW-Extension

[https://go.wisc.edu/y70yf3](https://go.wisc.edu/y70yf3)

This week in the WI Fruit News you can read about:

- Rain and insecticide applications
- New fruit team publications, and updates to website
- Insect Diagnostic Lab update
- Plant Disease Diagnostic Clinic update
- Japanese beetle emergence has begun!
- Cranberry plant and pest degree-days: June 27, 2018
- Post bloom fruit-zone leaf removal. Now is the time!
- A reason to start spraying fungicides early in the season
- Grape variety developmental stages: June 28, 2018
- Grape insect scouting report – Japanese beetle season begins
- Section 24(c) Special Local Needs label for Mustang Maxx
- Return bloom in apples

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**UW/UWEX Plant Disease Diagnostic Clinic (PDDC) Update June 29**

Brian Hudelson, Sue Lueloff, John Lake and Ann Joy

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from June 23, 2018 through June 29, 2018.

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The 6/29/18 PDDC Wisconsin Disease Almanac (i.e., weekly disease summary) is now available at:

AGRONOMY/SOILS FIELD DAY

Wednesday, August 22, 2018
UW-Arlington Agricultural Research Station

PROGRAM

8:00  Registration ($0), coffee

8:30  Tours
Soil Fertility & Management
Grain Production Systems
Interseeding in Grain & Forage Systems

10:30 Tours
Soil Fertility & Management
Grain Production Systems
Pest Management

12:00 Lunch Speaker: Dan Veroff
Wisconsin Population & Demographic Megatrends:
Implications for Agriculture & Farming
Lunch provided by Badger Crops Club ($5 donation)

1:00  Tours
Pest Management
Interseeding in Grain & Forage Systems
Equipment Rodeo

2:45  Have a safe trip home!

TOURS

8:30  10:30  Soil Fertility & Management
Improve ROI and NUE by timing N applications for corn
Carrie Laboski
Soil sampling with banded fertilizer
Andrew Stammer
Use of a rye cover crop in dairy forage production:
Environmental and yield benefits
Francisco Arriaga
Soil health in Wisconsin
Matt Ruark

8:30  10:30  Grain Production Systems
Forages: Old, new and reimagined
Ken Albrecht
Management practices that minimize the soybean yield gap on your farm
Shawn Conley
Advances in crop biotechnology at the Wisconsin Crop Innovation Center
Heidi Kaeppler
The Wisconsin corn pop-up/starter fertilizer challenge
Joe Lauer

8:30  1:00  Pest Management
Using fungicide in corn for grain and silage
Damon Smith
Weed management for annual cropping systems
Rodrigo Werle
Using an integrated approach to western bean cutworm management
Bryan Jensen
White mold management
Megan McCaghey

8:30  1:00  Interseeding in Grain & Forage Systems
Interseeding cover crops in organic corn and soybean production
Erin Silva
Interseeding legumes with Kernza
Valentin Picasso
Small grains with frost seeded clover
Lucia Gutierrez
Interseeding corn and alfalfa
Will Osterholz

1:00  Equipment Rodeo
Agriculture technology: Planting, UAV remote sensing and autonomous machines
Brian Luck, Jessica Drewry, Jeff Nelson

Visit exhibits between tours and during lunch
UW Soil & Forage Analysis Lab, SnapPlus, Nutrient & Pest Management Program and more!

Certified Crop Advisors
7.5 CEU credits requested

The Arlington ARS is located on Hwy. 51, about 5 miles south of Arlington and 15 miles north of Madison. Watch for Field Day signs.
GPS coordinates: 43.300467, -89.345534

In the event of rain, presentations will be held inside.

For more information contact the Arlington Ag Research Station at 608-846-3761 ext 101.

The College of Agricultural and Life Sciences will make a reasonable effort to provide accommodations for participants with disabilities when notified in advance. To request a disability accommodation, please contact ars_accommodation@cals.wisc.edu or call 608-846-3761 ext.101 at least 10 days in advance of event. Efforts will be made to meet same day requests to the extent possible.

To help us organize a successful event, if you are considering attending please complete a RSVP at https://go.wisc.edu/uwtu24

Thanks!
Learn management strategies, such as variety selection, managing stands, and marketing your crop, so you can put wheat back into your rotation and make money! Also learn how wheat can increase profitability of your other crops and improve soil health.

**July 9th—10am—2pm**

**Arlington Research Station—Public Events Building**

**Cost:** $15 (includes lunch and refreshments)

**Register online:** [https://fyi.uwex.edu/danecountyag/events/wheat](https://fyi.uwex.edu/danecountyag/events/wheat)

**phone:** 608-224-3704

**email:** nunez.barabara@countyofdane.com

**Topics & Presenters:**

- **“Choosing Successful Winter Wheat Varieties, Staging Wheat and Fertility Management”**
  
  **Shawn Conley, UW Soybean and Small Grain Specialist**

- **“Winter Wheat Diseases and Fungicide Selection and Timing”**
  
  **Damon Smith, UW Field Crops Plant Pathologist**

- **“Using Winter Wheat and Cover Crops in Your rotation to Improve Your Soil”**
  
  **Jamie Patton, Outreach Specialist for the Nutrient and Pest Management Program**

- **“Marketing Winter Wheat to Maximize Profits”**
  
  **Brenda Oft, Commodity Broker and Farm Market Consultant for Midwest Market Management**

- **“Introducing Winter Wheat Into a Rotation to Increase Rotational Profitability”**
  
  **Heidi Johnson, Dane County UW-Extension Crops and Soils Agent and**
  **Jeff Gaska, Dodge County Farmer**