Wisconsin Crop Manager

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Question of the week: What is up with all of this white mold on soybeans?

Damon Smith, Extension Field Crops Pathologist, University of Wisconsin-Madison

I have been getting a lot of questions this week about the perceived large amount of white mold in soybeans in Wisconsin. There is more white mold out there than we predicted. However, there is also some confusion out there on how all this white mold got there and how to interpret the amount of white mold as it relates to yield loss. Below is a great question I received today and will try to answer below.

Question

What is up with all this white mold? Here is my interpretation of what is going on, correct me if I'm wrong. White mold infection happens at R1, way back in June, but disease symptoms (flagging plants) show up in late July and August, correct? While the plant got infected in June, the weather needs to be right for the disease to grow – cool nights, warm days and wet conditions. As we go into August these conditions are more common and the disease appears to be spreading when actually it was already there it just needed the right weather to explode? Also I think we often over estimate the amount of infection, it just looks bad, but infection rates are not as high as we think. If we lose 2 to 5 bushels for every 10% increase by R7, that means if we have a 10% infection rate, we may lose a very small amount 2 bushel or more, maybe 5 bushels. Assuming 130,000 plants per acre, that would require 13,000 plants per acre to be infected, correct?.

Answer

I'll answer the easier part of the question first.

- Yes, everyone over-rates severity of white mold. Because it makes those bleached stems that look horrible, everyone estimates it much higher than it is. I had a person tell me that he had a field that was 60-70% white mold. I asked him, "you mean to tell me there are 6-7 plants out of every ten plants in that field infected?" He stopped a minute and then thought about his answer again. Our field crew has rated about 20 fields around the state, in addition to our research plots. In production fields incidence ranges from 0-30% with most in the 10% range.

We make 25 stops in a field. We rate the plants in 1 meter for two rows at that stop. We count all the plants in that one meter to establish the stand number, and then count infected plants. We then take a severity index rating too. I try to encourage people to make random stops and count the stand and then infected plants and not try to visually estimate. As humans, we make everything worse – its habit. So yes, at 10% and a stand of 130,000 plants you would need to have 13,000 plants per acre showing symptoms before you can detect reliable yield loss. Sure, you might have sections and pockets where you will have white mold and high yield loss, while other sections of the field yield really well, offsetting that loss. So you need to look across the whole acre to get a good estimate.

- Now for the hard part. The data, ours included, show that you have to have apothecia during bloom for infections. Yes, some plant-plant touching can spread the pathogen, but our data suggest that this method is infrequent. In 2016, the weather during the major part of bloom was really too warm and our models suggested this. However, here is what I'm thinking happened based on our observations and what we know about the white mold fungus biology. First, we had above average rain. Frequent rains can cool the plant canopy and offset the ambient temperature. This fungus is super sensitive to temperature. More so than moisture. Our lab and other labs have done a lot of work on this and it always comes back to temperature that is most important for the white mold fungus. Also, because we had good growing conditions, rows closed quickly this year, giving us thick canopy even at R1; bloom often started early this year. A lot of our soybean varieties are indeterminate and can have an extended flowering period. This also doesn't help our case. The longer that bloom lasts or flowers are present, the longer the crop is at risk for white mold. The weather has continued to be conducive now for apothecia. We continue to find apothecia right now (Mid-August) in our plots and my student is still trapping white mold fungus spores. This is unusual, but given that the canopy is thick and the weather is mild, not entirely surprising. If there are blooms out there, these spores are infecting. There is about a 10-14 day incubation period in the field. So fresh infections you are seeing now happened in early August. All of this just depends on when the crop bloomed and how long it bloomed for. So, late-planted soybeans with extended bloom periods probably got hit pretty hard. White mold is definitely heavier north of Arlington, Wisconsin. So I think having a slightly later planting and bloom period coincided with conducive temperature.

Summary

There is a lot of white mold out there. Be diligent in trying to assess the damage. Don't just visually estimate incidence. Actually make 10-20 stop per acre and count plants with white mold and also total stand at that stop. Convert the white mold numbers to percentage based on the stand count. The rule of thumb is that for every 10% increase in white mold incidence yield loss with range between 2 and 5 bushels.

Top 8 Recommendations for Winter Wheat Establishment in 2016

Shawn Conley, State Soybean and Small Grains Specialist

John Gaska, Outreach Specialist

Damon Smith, State Field Crops Pathology Specialist

Top 8 winter wheat establishment recommendations:

1. Variety selection: please see the 2016 WI Winter Wheat Performance Test
2. Plant new seed (DO NOT plant saved seed).
3. A fungicide seed treatment is recommended for winter wheat in WI, especially for seed damaged by Fusarium head blight (FHB)
4. Wheat should be planted 1 inch deep.
5. The target seeding rate for wheat planted from September 15th to October 1st is 1,300,000 to 1,750,000 seeds per acre.
6. The optimal seeding rate for wheat planted after October 1st should be incrementally increased as planting date is delayed to compensate for reduced fall tillering.
7. Crop rotation matters.
8. Plant between September 20 and October 5

Click here to read more about each of the recommendations.

Start Managing for Fusarium Head Blight Now Before You Plant the 2016/17 Crop

Shawn Conley, State Soybean and Small Grains Specialist

Damon Smith, State Field Crops Pathology Specialist

Most WI winter wheat growers dodged the Fusarium head blight (FHB or scab) bullet in 2016; though many farmers especially those in SW WI became so disgusted with dockage and rejections in both 2014 and 2015 they didn't plant a single acre this year. Therefore as we prepare to put the 2017 wheat crop into the ground here are a few considerations for managing FHB before we drop a single seed.

- Crop rotation matters. Data from our long-term rotation studies indicate that **wheat following soybea**n provides the greatest yields. The next best options are wheat following corn silage (6.5% less) then corn for grain (21% less). Wheat following alfalfa or another leguminous crop are also good options, though the N credits following alfalfa may best be served going to corn. Furthermore, background fungal pressure (residue on and in soil) from the FHB fungus will be greater following corn then soybean or another legume, however know that spores that infect your wheat crop can arrive fromoutside the field. Please click to see more information on theTop 8 Recommendations for Winter Wheat Establishment in 2016.

- Variety selection matters. Data from our 2015 and 2016 WI Winter Wheat Performance Test shows variable yield and disease performance among the varieties listed. Select those varieties that have both good to excellent FHB (2015) and Stripe Rust (2016) resistance and high yield. When evaluating disease resistance, low numbers for both incidence and severity can be helpful, but the major focus should be placed on incidence (measure of the number of symptomatic plants in a stand).

- Application timing matters. One of the biggest challenges year in and year out is improper fungicide application timing. Our data suggests that on susceptible (Hopewell) or moderately susceptible varieties (Kaskaskia) equal efficacy of the fungicide Prosaro at a rate of 6.5 fl oz/acre can be achieved when applied between Feekes 10.5.1 (anthesis) and 5 days after anthesis. Given the variability of head emergence and anthesis across a landscape it may prove best to wait a few days until the whole field is flowering than to apply too soon.If the extruded anthers have turned from yellow to white across the whole field then you are likely too late. Remember it roughly takes a wheat head 7 days to completely self-pollinate.

Fusarium head blight incidence ratings for four soft red winter wheat varieties treated with Prosaro SC fungicide at 6.5 fl oz/a at anthesis (Feekes 10.5.1), five days after anthesis, or not treated in Wisconsin in 2015.

	Hopewell (Susceptible)	Kaskaskia (Moderately Susceptible)	Pro 200 (Moderately Resistant)	Sunburst (Moderately Resistant)
Prosaro SC @ 6.5 fl oz/a (Feekes 10.5.1)	9.5b	2b	0.5	4
Prosaro SC @ 6.5 fl oz/a (5 days after Feekes 10.5.1)	7.5b	5.25b	2.75	2.75
Non-treated control	31.25a	17.5a	3	1.5
Pr>F	0.01	0.01	ns	ns
LSD	6.44	6.44	ns	ns

- Choose the right fungicide class. Make sure you use the appropriate fungicide product and class to manage FHB. The label for products containing strobilurin active ingredients (FRAC group 11) ends prior to flowering. Late application can actually lead to increased mycotoxin levels. Triazole containing products (FRAC group 3) are recommended for FHB control. For a list of products and efficacy ratings, visit the Field Crops Fungicide Information Page.

- Harvest timing and flash drying. The word on the street is that if FHB appears to be a problem in 2017 elevators will push growers to harvest early (18% moisture or higher) and subsequently dry grain to mitigate mycotoxin levels. While drying grain to 13% or less moisture is a good storage practice, know this process may kill the pathogen but any mycotoxin levels already in the grain will not dissipate. Vomitoxin is a very stable molecule and IS NOT degraded by heat, freezing, or drying.

Vegetable Crop Update Aug. 20

Amanda J. Gevens, Associate Professor & Extension Vegetable Plant Pathologist

24th issue of the Vegetable Crop Update is now available.

In this newsletter we focus on:

- Information on P-Days and DSVs for potato disease control
- Summary of late blight and cucurbit downy mildew in WI and in the US

Click here to view this issue.

Wisconsin Fruit News, Issue 10

Janet van Zoeren, Christelle Guédot, and Amaya Atucha, University of Wisconsin – Madison, Departments of Entomology and Horticulture

Click here for the 10th issue of the Wisconsin Fruit News.

In it you will find information about:

- Plant Disease Diagnostic Clinic update
- Insect Diagnostic Lab update
- Unusual fruit crops for Wisconsin markets: Currants
- Strawberry rootworm
- Cranberry degree-day map and update
- Grape disease update
- Grape developmental stages
- Ripening process of grapes in primary and secondary shoots
- Reduced-risk insecticide profile: Rimon
- Pre-harvest fruit drop control in apple orchards

Wisconsin Pest Bulletin 8-25-16

Krista Hamilton, Entomologist, WI Dept of Agriculture, Trade and Consumer Protection

Volume 61 Issue No. 17 of the Wisconsin Pest Bulletin is now available at:

https://datcpservices.wisconsin.gov/pb/pdf/08-25-16.pdf

INSIDE THIS ISSUE

LOOKING AHEAD: Substantial corn earworm flights registered again this week

FORAGES & GRAINS: Potato leafhopper counts remain low to moderate

CORN: Final results of the annual corn rootworm beetle survey

SOYBEAN: Japanese beetles still common in soybean fields

FRUITS: Late-season codling moth flights continue in several orchards

VEGETABLES: Fall clean-up advised for reducing over-wintering pest populations

NURSERY & FOREST: Leaf spot diseases of trees and shrub prevalent this season

DEGREE DAYS: Growing degree day accumulations as of August 24, 2016

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