

# Wisconsin Crop Manager

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Growers and consultants can either reassess in a week or pull plants from the field and place in warm environments. Milk houses and kitchens work perfect. Root regrowth will appear from the crown and will appear as vibrant white roots as shown below.



## Wheat Stand Assessment: I can tell you if it is alive...too early to say if it is dead!

Shawn Conley, Soybean and Wheat Extension Specialist

Ice covered wheat fields coupled with strong corn and soybean prices and no field activity have growers and consultants considering tearing up their winter wheat fields. Before we get to crazy here are a few points to consider while we wait for spring to arrive.

1. As you look across your wheat landscape vibrant green patches will be interspersed with drab brown areas. The brown areas do not necessarily indicate those plants are dead.



If plans do not recover our critical threshold for turning over a field is 12 to 15 live plants per square foot. Below this threshold is an automatic replant. For more detailed information on assessing winterkill please view [Wheat Stand Assessment, Winterkill Yield loss, and Nitrogen Application](#).

2. Evaluate tiller number and make the N timing decisions. It is important to remember that the functional purpose of spring N is to 1. stimulate tillering and 2. provide crop nutrition. If ample tillering (> 70 tillers per square foot) has occurred growers can delay N applications up to pre-joint (Feekes 4-5; Zadoks 30). This practice will aid in minimizing early spring N loss. Applications of N made after this growth stage may lead to wheel track damage. If growers have < 70 tillers per square foot it is important to get across those fields as soon as possible to minimize yield loss due to low tiller/head counts. For more information on tiller counts and spring N timing please view my YouTube video entitled: [Wheat Stand Assessment and Nitrogen Timing](#).

3. Lastly the frost is coming out of the ground. Be cautious as you make your way out to the wheat fields to make your stand assessment or you will be spending your time or more importantly my time time digging out your truck!



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### Wheat Scouting and a little more about rusts

Damon Smith, Extension Field Crops Pathologist (Department of Plant Pathology, University of Wisconsin-Madison)

On April 2nd I scouted my first wheat plots of the 2013 season. These plots were located at the Arlington Agricultural Research Station located in Columbia Co. The snow was finally mostly off this field and plants were readily visible. Spotty areas of ice damage and winter desiccation were evident as the field was scanned (Fig. 1). On closer look, many of the wheat plants appear to be in mediocre or poor shape (Fig. 2). However, many of these plants still had green crowns and white roots. For more information about assessing stands of wheat like this one, consult Dr. Conley's blog at <http://thesoyreport.blogspot.com>.



Winter wheat plots located at the University of Wisconsin Arlington Agricultural Research Station.

Photo taken on April 2, 2013.

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### Value of Residual Herbicide in Reduced Soybean Stands

Vince M. Davis, University of Wisconsin-Madison

**Executive Summary**  
(5 min 18 sec)

**Full Presentation**  
(36 min 01 sec)

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**Summary:** This presentation will help consultants, growers, and other practitioners in the North Central U.S. evaluate the importance of residual herbicide use in soybean systems to maximize profit and proactively manage for herbicide resistance. Herbicide-resistant weeds are a serious threat across the Nation. It is important to maximize the benefits of cultural weed control by using the best agronomic management practices. However, the cost of soybean seed is dramatically increasing and this presentation discusses the interaction and relative importance of residual herbicide verses extra soybean plants in the canopy.

**Responsibility:** United Soybean Board (USB) farmer-leaders develop and maintain partnerships with U.S. land grant universities and U.S. ag-focused research organizations such as



Winter wheat plants exhibiting freeze damage and/or winter desiccation.

Photo taken on April 2, 2013

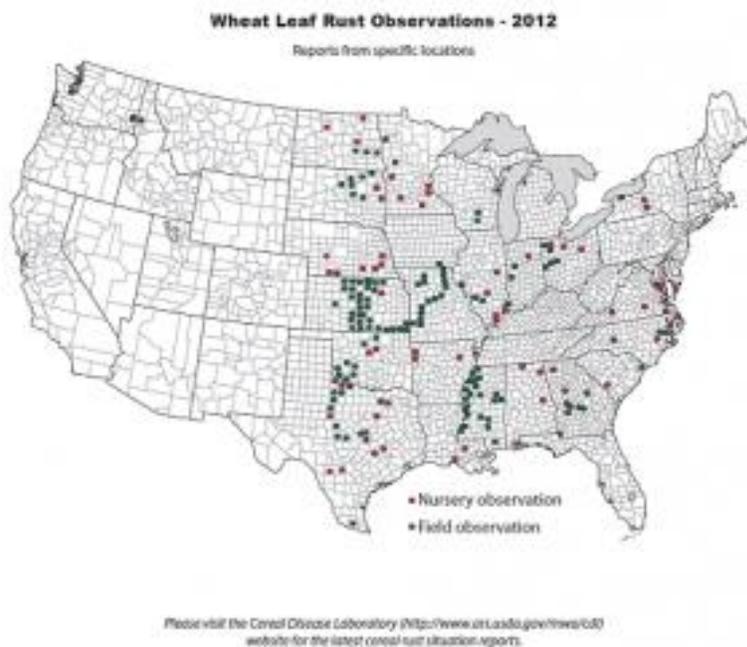
Additionally I scouted these stands of wheat for any signs of pathogens and plant disease. No diseases were readily evident in these plots at this time. As the weather gets warmer and spring rains begin to set in, growers and scouts should scout wheat more frequently. These weather conditions are conducive for many diseases of wheat.

Last week I also had the opportunity to attend a 1-day workshop at the USDA-ARS Cereal Disease Laboratory located on the University of Minnesota campus in St. Paul. At the workshop attendees were updated on the latest information about rusts of wheat. The main focus was on stem rust of wheat, but we also talked about the status of leaf rust and stripe rust.

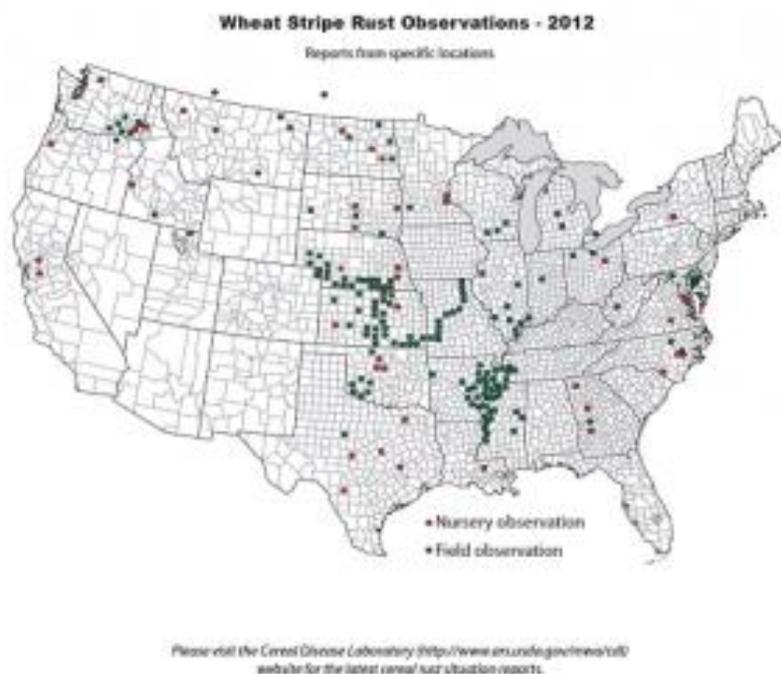
You will remember from the last issue of the Wisconsin Crop Manager, I talked a bit about rusts in the context of treating them using fungicides. All rusts (stripe rust, leaf rust, and stem rust) are favored by wet weather and periods of extended leaf wetness. However, temperature optimums vary among the different rusts. Stripe rust is favored during periods when temperatures are between 55 and 65F, while leaf rust tends to occur at a higher temperature range of 60 to 72F. Stem rust tends to occur at temperatures between 60 and 104F. In most years, spores of the rust pathogens will not readily overwinter in Wisconsin. Cold temperatures (<32 F) will reduce the ability of rust pathogens to overwinter. In the case of stem rust spores especially, spores are brought into Wisconsin on wind currents from southern states.

In years where there is extended snow cover, two of the wheat rusts may have the ability of overwintering in more northern latitudes in the U.S. Some work has been done to show that even in the Minneapolis area, the leaf rust pathogen can overwinter on wheat debris under an insulating blanket of snow. If you consider that the stripe rust pathogen tends to like cooler temperatures, the likelihood of this pathogen overwintering is even higher. The stem rust pathogen is least likely to overwinter in the northern U.S. because it prefers much warmer conditions. These trends are evident in the 2012 observation maps that were prepared by the USDA-ARS Cereal Disease lab. Patterns of leaf rust (Fig. 3) and stripe rust (Fig. 4) reporting were much more uniform across the U.S. in

2012, reflecting the fact that these two rusts might have the increased ability to overwinter in more northern latitudes, and that more races of these rusts might be present. Maps of stem rust observations show that this disease is less uniform in occurrence indicating that there are not only fewer races, but the pathogen has to be blown in from locales such as far southern Texas each season.



USDA-ARS wheat leaf rust observation, 2012.



USDA-ARS wheat stripe rust observation, 2012.

Be aware, that the occurrence of leaf rust and stripe rust is more likely in Wisconsin than is stem rust, but all three rusts can occur here on winter wheat. Crop Management professionals should scout stands of wheat frequently for rust prior to heading. As with any disease, the success of a rust management decision will be higher, the earlier you catch the epidemic. Be sure that you walk the field and check multiple locations, perhaps walking in a zigzag or W-shaped pattern checking plants frequently along the route. For more information on how to identify rusts and other foliar diseases of wheat visit:  
[http://fyi.uwex.edu/fieldcroppathology/files/2010/11/Wheat\\_Disease\\_ID.pdf](http://fyi.uwex.edu/fieldcroppathology/files/2010/11/Wheat_Disease_ID.pdf)



USDA-ARS wheat stem rust observation, 2012.

## Disease Profile – Phytophthora Root and Stem Rot of Soybean

Damon L. Smith, (Plant Pathology, UW-Madison/Extension)

Phytophthora root and stem rot (PRSR) is a common disease of soybean that can ultimately cause death of soybeans at any stage of development. The disease can cause stand losses and severe yield reductions in susceptible soybean varieties.

PRSR is caused by the water mold *Phytophthora sojae*, a soilborne organism that survives in soil via specialized survival spores called oospores. Oospores are produced in infected soybean plants, and can survive for many years in the soil after soybean residues decompose. Oospores germinate when soil moisture is high, producing reproductive structures called sporangia. These structures can germinate directly and infect soybean roots, or can produce numerous microscopic spores called zoospores that are released when soils are saturated or flooded. Zoospores are attracted to, and can swim towards, germinating seeds or roots. *P. sojae* tends to be most active when temperatures are between 58°F and 77°F, as opposed to *Pythium* species (the causes of Pythium root rot) which tend to be active over a wider temperature range (50°F to 95°F).



Brown discoloration of a soybean stem as a result of infection by *Phytophthora sojae*.

Photo Credit: Craig Grau.

Watch for symptoms of PRSR in fields or areas of fields with poor drainage. Once plants emerge, PRSR can lead to yellowing, wilting, and death (called post-emergence damping-off). Infected seedlings can be easily pulled from the ground because of damage to developing roots. Symptoms of PRSR in older plants (particularly those infected before flowering) include root decay, browning and water-soaking of stems extending 6 to 12 inches above the soil line, yellowing of leaves, wilting, and eventual death, with leaves on dead plants remaining attached.

Once soybean plants become infected by *P. sojae*, there is no cure. Therefore, management of PRSR relies on preventing infections from occurring. To avoid problems with PRSR, use PRSR-resistant varieties as a primary means of disease management. In addition to using resistant varieties, consider using seed treatments containing metalaxyl or mefenoxam. These active ingredients have been shown to be effective in providing early protection of soybean seeds and seedlings against *P. sojae*. Also improve soil drainage to promote drier soils that are less favorable for *P. sojae* growth and reproduction.

For more information about PRSR on soybean [CLICK HERE TO DOWNLOAD A PDF.](#)

