



# Blights & Insights

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A Regular Update from our  
Plant Diagnostic Laboratory,  
SDSU Plant Pathologists &  
CES Educators in the field.

A summary of observations  
& disease management info  
for the field & garden.

## Rust Came in Yellow Stripes and Viruses Followed Close Behind...

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Tan spot, wheat streak, leaf rust and scab! Sounds a bit like the Four Horsemen of the Apocalypse, doesn't it? I don't think the End of Days is upon us just yet, but SD wheat growers who are busy fighting off the 'pestilence and plagues' affecting their crops this spring might think differently.

**Stripe rust** (*Puccinia striiformis*) was mentioned in the last issue of B&I and it seems to have been a good prediction...looks like it has arrived in parts of central and southern SD according to reports from Bob Fanning, SDCES Agronomy Educator in Lyman County and a couple of producers in the central part of the state. We investigated it this morning and indeed we found one lonely stripe rust lesion (Fig. 1) in a field near Reliance during the pouring rain and cold temps! Based on information from southern states, the race that's prevalent this year is affecting a large number of varieties, even many that were considered resistant.



**Figure 1. Stripe rust of wheat (caused by *Puccinia striiformis*).** From l to r: a single infection of stripe rust in a SD winter wheat field, Lyman Co. 2010 (photo © SDSU Extension Plant Pathology); typical lesions on a leaf (photo courtesy of M. Burrows, Montana State); showing powdery spores that transfer to clothes and skin (photo courtesy of M. Burrows, Montana State).

Stripe rust, or yellow rust as it is sometime called has symptoms of distinct shape and color. Figure 1 shows the characteristic yellow-orange stripes. Like other rust diseases, the spores easily rub off onto clothes or fingers. The disease is only an occasional problem in South Dakota primarily because we don't tend to have large amounts of spores early in the season when the disease is most problematic. Of our three wheat rusts (stem, leaf, and stripe), stripe rust is active at the coolest temperatures, about 50-75°F. Leaf rust (Fig. 2), which is most common in SD, doesn't become highly active until around 60-70°F, and stem rust is happiest above 70°F, to about 85°F (all temps are for night-time, when infection begins). After infection, the rust grows in the leaf and produces more powdery, infective spores after about 10 days.



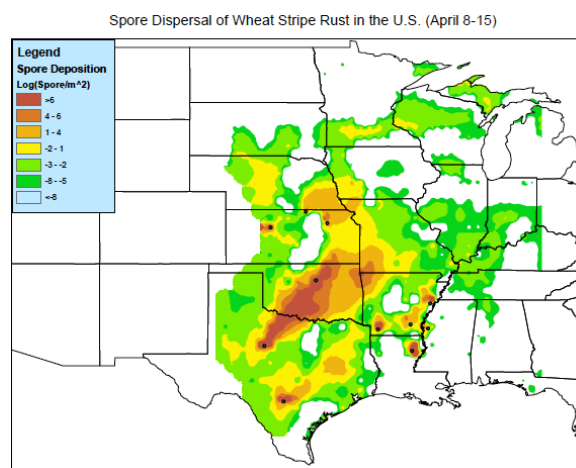
**Figure 2. Leaf rust of wheat (caused by *Puccinia recondita*).** Note oval to round pustules, red-brown in color and bordered by yellow halo. Pustules may vary greatly in size, distribution and presence of halo often depending on host resistance and pathogen race. Photo © SDSU Extension Plant Pathology

### ***Rust Management Options:***

Depending on your variety, and the growth stage of the wheat in your fields recommendations may differ. If the disease is present before jointing stages, there is a chance to get in an early application of foliar fungicide while the crop is still developing. The spray won't prevent lesions from developing if infection has already occurred, but it will keep emerged leaves clean for about 10-14 days and keep inoculum levels low in a field. Application at flag leaf timing may be useful if weather remains mild and moist but do keep yield and prices in mind. If your wheat is already past jointing but not yet to flag leaf stage, it is recommended that you wait to treat until the flag leaf is fully emerged to maximize the effectiveness of the treatment. For those who may also develop risk for head blight, the flag leaf timing can be delayed to achieve a flowering-time treatment that provides some protection of the flag leaf and also scab suppression. In these cases, leaf disease control may be reduced somewhat so weigh your disease risks carefully. Also be advised to avoid strobilurin fungicides (Headline, Quadris, premixes) on headed wheat to avoid the risk of increased vomitoxin in grain.

In general, nearly all of the fungicides available provide excellent rust control if applied before infection begins. The triazole fungicides (e.g. Folicur, Caramba, Prosaro) may also provide a certain amount of curative activity and can still achieve excellent control even a few days after infection in many cases. The strobilurins tend to be a bit better on tan spot prevention. Premixes such as Quilt and TwinLine provide both protective and curative activity. More information is available in SDSU Extension Publication FS952: *SD Wheat Fungicide Recommendations*, online at: <http://agbiopubs.sdstate.edu/articles/FS952.pdf>.

Figure 3 below shows a predicted spore deposition coming from stripe rust sites in southern states. The map is a mathematical model of where the spores will be carried and deposited based on wind, rain, and a few other factors. Note that the map is dated April 8-15, which means that any spores landing and infecting wheat at that time have likely reproduced at least once. Given the wind and wet weather we've had, there is the potential for some development over the next few days and weeks depending on where the disease has taken hold, however recent cold temperature may slow it a bit.



**Figure 3. Predicted spore dispersal of Wheat Stripe Rust, April 2010.** A model of rust spore dispersal from known stripe rust sightings, Apr 8-15, 2010. Courtesy X.B. Yang, Iowa State University Ext. Plant Pathology.