Stripe Rust Alert for Fall-planted Winter Wheat
Juliet Marshall, University of Idaho. August 31, 2011

This year is setting up to be a lot like last year. We have a late harvest of spring wheat going, volunteer wheat growing under harvested grain, and some hail damage in winter wheat that has contributed to the “green bridge”. A green bridge is the overlap of different cropping cycles within a year, leading to the constant availability of living, green plants of a given crop.

Given the train wreck with the previous year’s stripe rust epidemic, we need to be vigilant about protecting this year’s grain.

PREVENTING INFECTION THIS FALL. General Recommendations.

1) Destroy volunteer wheat that is growing under harvested grain. This will reduce the green bridge effect, where the volunteer wheat becomes infected and serves as a source of inoculum for our newly planted winter wheat.

2) Plant late. This may help reduce the green bridge effect. The spring wheat is starting to turn in the upper elevations. If we can delay planting the winter wheat, we may be able to avoid emergence when spores are still being produced by late maturing spring grain.

3) Plant resistant varieties. Or just don’t plant those very susceptible varieties! A listing of the reactions of this year’s entries in the winter and spring wheat variety trials is available on our cereals website: http://www.extension.uidaho.edu/scseidaho/disease/disease_index.htm and click on “Stripe Rust Information”

4) Use seed treatments. While seed treatments will not last more than 2-3 weeks, and they will not be 100% effective, they will reduce the chances of fall infection. Seed treatments should prevent the initial infection of stripe rust and buy us a week or two of time. If stripe rust is still active after fungicide wears off, then you will still get fall infection. There are many plants that have adult plant resistance but will not be resistant as seedlings, so seed treatments will help those varieties, too. The seed treatments listed for REDUCTION of stripe rust are Baytan30 at 1.25 fl oz/100 lbs seed and Dividend XL RTA at 10 fl oz/ 100 lb winter wheat seed. This was in the 2011 PNW Plant Disease Management Handbook, but I am sure other seed treatments will be effective. Check the labels and ALWAYS FOLLOW LABEL INSTRUCTIONS.

5) Scout for fall infections. Mark the infected areas with flags or GPS coordinates so you know where to look first thing in the spring. Examine older leaves for living lesions. (Like me, you may need magnification to verify active infections where orange spores are still being produced.)

A combination of practices will reduce fall infection. The less plants infected in the fall, the less the chance of stripe rust overwintering, so fungicides should help. The best bet for controlling stripe rust is preventing infection in the first place so I think seed treatments are critical this year. A minimum two-week break in the green bridge is recommended. However, if your neighbor has stripe rust in a susceptible variety, then we have a “Typhoid Mary” situation! We saw how fast stripe rust spread this year, and it will take the combined efforts of all of us to reduce the infection and spread next year.
What if stripe rust DOES overwinter again?

We will be keeping an eye on fall infections and the conditions that contribute to overwintering. Last year, we had conditions in Aberdeen where the temps got close to or right at 23 degrees F with minimal snow cover. Exposed leaf tissue with sporulating lesions will be killed at those temperatures. I really expected stripe rust to have been killed, but I am sure things vary depending upon humidity, wind conditions, snow cover, etc. At Aberdeen, those fall infections, the lesions, and the fungus survived the winter. Sometimes the leaves may be infected, but the rust hasn’t developed those lesions yet. This is called a ‘latent’ infection. As long as the wheat leaves survive, those latent infections may survive as well, even if the temperatures do get below 24 degrees F.

I don’t think spraying fungicides in the fall is necessary even if we have a fall infection. If there is fall infection AND overwintering, then fungicides with herbicide application will help reduce the impact.

Should stripe rust overwinter, full rates of triazole fungicides at herbicide timing will be critical in reducing the impact of stripe rust infection. Multiple applications will be required with susceptible varieties. Scouting IS A MUST of all varieties, even resistant varieties, as the fungal races can and often do change.

Remember, preventing infection in the first place will be the key to maximizing yields. Seed treatments, resistant varieties, and reducing the potential for green bridge will be important. Following that, management will be critical if fall infection and overwintering occur, but yields may still be reduced.

WHAT EFFECT DOES SEED TREATMENTS HAVE ON RUST? On our website, we will also post the results of some experiments from Dr. Xianming Chen and David Wood, USDA-ARS, Pullman, WA. Utilizing seed treatments alone, stripe rust severity was significantly reduced in both spring and winter wheat. However, letting stripe rust continue uncontrolled for the rest of the season still resulted in 100% infection of all treatments on a susceptible variety. There were significant differences between fungicides used as seed treatments.