

# Steele County **Ag Alert**



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## Scout for Soybean Aphids

**By: Janet Knodel, NDSU Extension Entomologist**

The soybean aphids have arrived right on time! The IPM Crop Scouts have surveyed over 82 soybean fields last week and soybean aphids were observed in Stutsman, Sargent and Cass Counties of North Dakota. Soybean aphids were low  $\approx 10\%$  incidence and  $< 25$  aphids per plant on average. Other neighboring states also have reported non-economic populations of soybean aphids.

Begin scouting soybean fields to determine if soybean aphids are present in fields. See the NDSU YouTube Video on Scouting for Soybean Aphids. **No treatment is recommended until aphid densities reach the economic threshold level of 250 aphids per plant and when populations are actively increasing in 80% of field.** Early treatments are discouraged so insecticides do not reduce the presence of beneficial predators and parasites.

The critical growth stages for making most soybean aphid treatment decisions is the R1 (beginning bloom) to R5 (beginning seed) stages. Soybeans surveyed are in the vegetative V1-V4 to R3 (beginning pod) crop stages. At R6 (full seed), treatment is discouraged. Research trials throughout the north central states have not demonstrated a yield benefit to treating soybean for soybean aphid management at the R6 and later stages. Consult the [ND Field Crop Insect Management Guide 2014](#), E-1143, NDSU Extension Service, for a list of insecticides registered for soybean aphid control.

## Rust Review

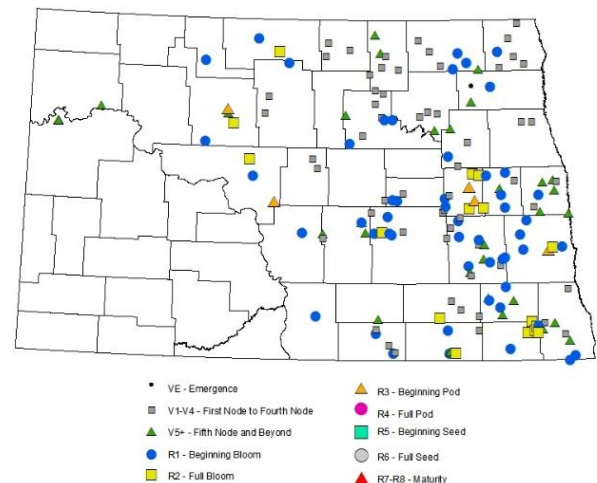
**By: Sam Markell, NDSU Extension Broadleaf Crop Plant Pathologist**

**Andrew Friskop, NDSU Extension Cereal Crop Plant Pathologist**

We have observed many rust diseases in the last couple weeks, including: common corn rust (Figure 1), wheat leaf rust (Figure 2), wheat stripe rust, oat crown rust (Figure 3), sunflower rust, safflower rust and even rust on

## Soybean Growth Stages

July 7 - July 18, 2014



**Figure 1. Common corn rust (*Puccinia sorghi*).**

vetch. This article is written to help explain the rust diseases. Detailed information on specific rusts will be in future Crop and Pest Reports if rust diseases become a concern.

**What is rust?** Rusts are caused by a group of fungal pathogens with complex life cycles. Many have up to five different spore stages and can sexually recombine and also asexually (clonally) produce spores. In some cases, there is an 'alternate host' that is needed for sexual recombination (barberry for the wheat stem rust pathogen, buckthorn for oat crown rust pathogen) but in other cases that sexual recombination happens on the crop host (the sunflower rust and common bean rust pathogens). The sexual recombination phase and the abundance of clonal spores are the primary reasons that the rust pathogens are able to evolve new races and cause major epidemics when the environmental conditions are favorable.

**What do rusts look like?** The uredinia stage of the rust life cycle is the most common and most recognizable spore stage. For the field crop rust pathogens in North Dakota, the uredinia are small raised pustules full of dusty spores that can be rubbed off easily. The color of the pustules/spores will vary from yellow/orange to nearly black, but many are red-brown rusty colored. The black telia stage can be observed at the end of the season. Additional spore stages such as pycnia and aecia are found on the alternate host for the cereal rust pathogens. However, the dry edible bean and sunflower rust pathogens do not require an alternate host, and pycnia and aecia occur on their host crop. Typically, pycnia are raised colored bumps, while aecia are brightly colored clusters of 'cups'.

**What environmental conditions favor rust?** Unlike many other fungal pathogens, rain is not necessary for infection. However, free moisture is necessary. Dew, fog and light rain all provide enough free moisture for infection to occur. Consequently, rust is often first observed near shelter belts; the shade provides a longer dew period. Similarly, it is rare to see some rusts before canopy closure because the leaves dry out quickly (common bean rust).

**How do rusts spread?** Rust spores are dispersed by wind. Some rust pathogens cannot survive winter in North Dakota and the disease is a result of spores dispersal from hundreds of miles away (leaf rust and stripe rust of wheat, common corn rust). Others overwinter well in North Dakota (for example, the pathogens that cause sunflower rust and common bean rust) and spores are locally dispersed.

**Do rusts spread between crops?** Rust pathogens are usually *very* specific to their host(s) or *very* closely related species. For example, the pathogen that causes sunflower rust (*Puccinia helianthi*) will only cause an infection on sunflowers and wild sunflowers, the pathogen that causes common bean rust (*Uromyces*



**Figure 2. Wheat leaf rust (*Puccinia triticina*).**



**Figure 3. Oat crown rust (*Puccinia coronata* var. *avenae*).**

*appendiculatus*) will only infect common bean, and the pathogen that causes leaf rust of wheat will not infect corn. Consequently, if you see rust in one crop, it will not spread to a different crop.

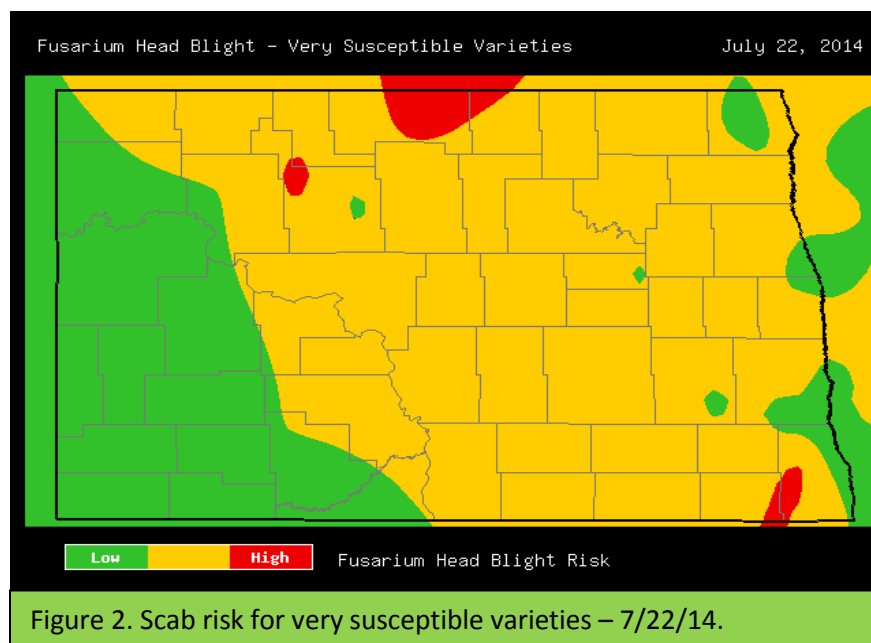
**How can you manage rust?** At this point in the season, fungicides are the only management tool available. Timing is critical, but in *general*, fungicides tend to be most efficacious when applied shortly after rust is observed on the upper leaves of a crop. Depending on the crop, management guidelines, forecasting models and/or action thresholds may be available.

### Scab (FHB) Update

**By: Andrew Friskop, NDSU Extension Cereal Crop Plant Pathologist**

During the past two weeks, I had the opportunity to visit several winter wheat production fields and winter wheat variety trials located on NDSU Extension and Research Centers. Most of the variety trials visited had noticeable levels of scab in them. However, in plots where an early flowering fungicide application was used, the incidence of scab was less. Similarly, the winter wheat production fields visited had low incidences of scab (5-10%) and most likely benefitted from an early-flowering fungicide application. Wheat and barley crops flowering during the last part of June into early July were at greatest risk for scab infection and scab symptoms (Figure 1) are most likely visible at this time.

Up until the recent rain events, the state experienced a stretch of weather conditions (dry, windy, and warm temperatures) that reduced the risk of scab development in flowering small grain crops. After the recent storm, the risk of scab has elevated for most of the state for very susceptible varieties that are flowering (Figure 2).



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