March 12, 2006

Stripe Rust Forecast for the Pacific Northwest

As the spring is around corner, many of you may be wondering if we will have stripe rust problem this year.

We have conducted stripe rust forecast using predication models based on the winter temperatures. I have presented the forecast results in the Wheat Research Progress Report meeting and seminars for growers. The results were also presented by Scott Yates in his article "Rust Expected to Hit Later This Year" on Capital Press (February 24, 2006)

The forecast results, shown in the following figure indicate that stripe rust will be likely developed to the highest level (100% severities) on susceptible varieties by the milk stage, as severe as last year.

Although the forecast model indicates as equally severe stripe rust for 2006 as it was in 2005, the disease will started later (at lease 2-3 weeks) in 2006. This is because of the following two factors. First, because of the lack of the moisture in last fall during the planting time, most of winter wheat fields in the Horse Heaven Hills and the Connell area were planted later (in October). These areas are the hot spots to catch stripe rust infection before winter. The late planting should have reduced stripe rust infection before the winter. Secondly, the cold weather in last December prevented further development of stripe rust during the winter. As I checked these areas in February, the plants were generally small and stripe rust was not found. This is different from the 2004-2005 winter, during which rust was continuing developing in the area of Horse Heaven Hills. The cold period in mid February has slowed winter wheat growth and also should have slowed rust development infected plant tissue. Therefore, based on the forecast model and these considerations, we will likely have another severe stripe rust year in the PNW, but the disease will certainly start later than last year and the damage should not be as great as last year because the initial rust pressure will not be as high as last year and the growth period for stripe rust development will be shorter in 2006. However, stripe rust is capable of quickly developing and spreading if temperatures and moistures are favorable for the rust. A great concern is that some new races of the fungus detected last year are more virulent. The appearance of the new races and increase of some races detected in 2003 and 2004 has rendered several spring wheat cultivars, including WPB 926, IDO377s, Hank, and Tara susceptible, and this group of cultivars will be more vulnerable to stripe rust in 2006. Please refer the updated Seed Buyer's Guide for choosing resistant and moderately resistant spring varieties to grow.

If you grow susceptible winter and spring wheat varieties, you definitely need to check your fields in late spring and get prepared for use of fungicides. We expected to see stripe rust in most part of the eastern PNW in May.

Wheat stripe rust has been reported in Louisiana, Texas, and Arkansas, even through not as severe as this time of the last year. Leaf rust is widespread in the Great Plains, from Texas to Nebraska.

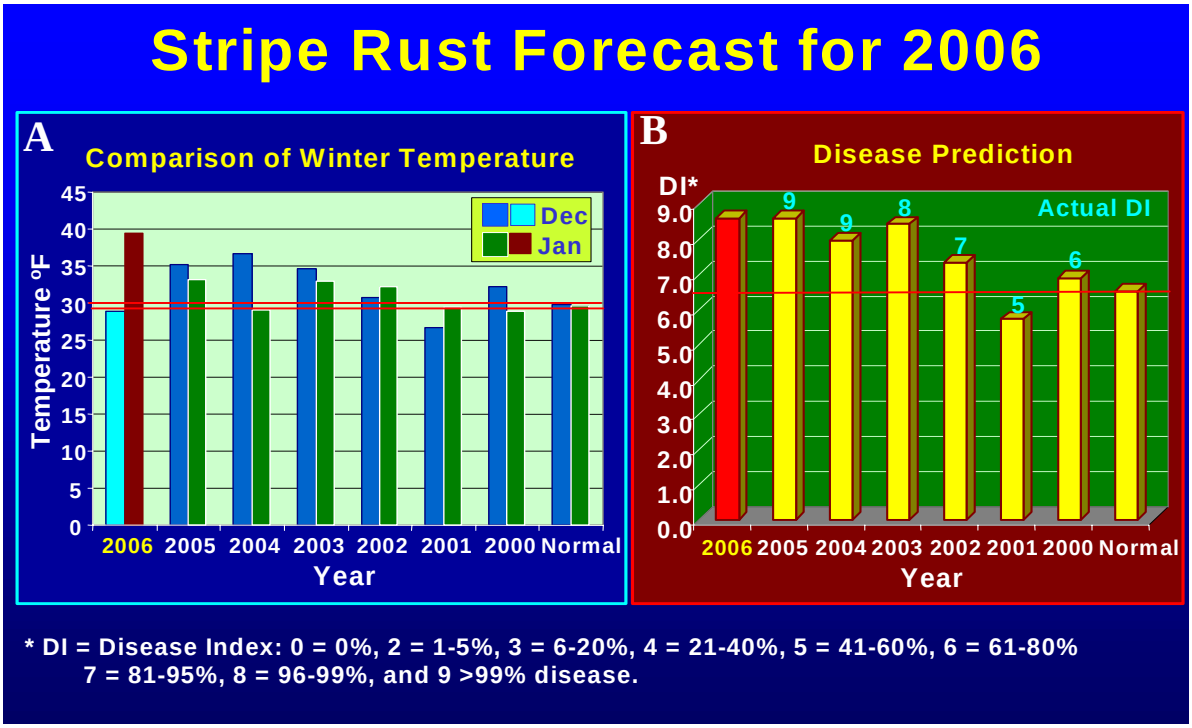

Fig. 1. Stripe rust forecast for 2006 based on temperatures in December, 2005 and January 2006 and comparison with temperatures and stripe rust levels of 2000-2005 and the "normal year of temperature". The "normal temperatures" are those from 1949 to 2005. A: Average monthly temperatures for December and January. B: Disease levels. The bars indicate predicated disease levels based on winter temperatures and the values (in blue) show the actual stripe rust level occurred on susceptible varieties in our experimental fields. Even through the temperatures and disease levels are those of Pullman, WA. The predication is generally applicable to the eastern PNW.