

Rust Update, June 18, 2010

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Stripe Rust of Wheat

As winter and spring wheat crops are progressing, fungicide application for control stripe rust on winter wheat crop has almost reached the end and has started on spring wheat crops in most areas of the Pacific Northwest. The winter wheat crop ranges from heading (Feekes 10.1) to soft dough stage (Feekes 11) and spring wheat crop ranges from mid jointing (Feekes 6) to flowering (Feekes 10.5) depending upon locations and planting dates. Stripe rust is everywhere. Some fields of winter wheat which has not been sprayed have 100% incidence (percentage of plants infected) with about 20 to 80% of severities (percentage of leaf area infected). For such fields, yield loss could reach up to 20%, considering the intermediate reactions. We have not found completely susceptible crops of winter wheat in commercial fields, but in experimental fields. Highly susceptible reactions are easily found in commercial fields of spring wheat. Based on the rust situation and weather conditions so far and predicted for next two weeks, a highly susceptible crop of either winter or spring wheat could easily have yield loss of more than 60%. Now, we have reached the critical time for fungicide application on spring wheat crop.

Based on our data in the past and field data and observations in this week, the following commonly grown spring wheat cultivars are susceptible: Hank, Hollis, Bullseye, Zak, Eden, Macon, Tara 2002, Nick, Westbred 926, and Scarlet, etc. are either moderately or highly susceptible. Fungicide application should be considered when rust is seen in these fields. Louise, Alpowa, JD, Alturas, Whit, Babe, Buck Pronto, Otis, Clear White, Patwin, Solano, Espresso, Wakanz, Lassik, etc. are either resistant or moderately resistant. Fields of these cultivars may not need to be sprayed. As we have observed, cultivars can react differently in different areas as rust races and environment conditions (mainly moistures and temperatures) can be different from one area to another. Therefore, it is important to check your fields to determine spray or not spray.

This year, black telia pustules of stripe rust are very common, especially on the lower leaves had early infection, due to the wet weather conditions and particular races. When rust infection reaches to the telial stage, damage has occurred already, and generally no further damage will occur for the crop.

Head infection by stripe rust is common this year. Damage by head infection is relatively low compared to leaf infection. Head infection usually occurs on susceptible cultivars. However, few cultivars can be infected on head, but leaves are resistant. Generally, when head infection occurs, it is too late to use fungicide.

In contrast to most other areas of the PNW, southern Idaho has had very late appearance of stripe rust. According to Dr. Jianli Chen and Dr. Juliet Windes, stripe rust was reported on spring wheat Ulturas in Burley, Idaho, but has not been confirmed.

Nationally, stripe rust has been reported from the south to north and from west to east in all major wheat growing areas and severe in many states, such as California, Oregon, Washington, Texas, Louisiana, Arkansas, Oklahoma, Kansas, and Nebraska. Stripe rust has also been reported in Ontario, Canada.

High-temperature adult-plant (HTAP) resistance has been working in the PNW, but not to their full levels under the cool and wet conditions so far. There is no a clear cut off point of either temperature or plant stage for HTAP resistance to work or not work. It is a quantitative effect of cultivars (level of HTAP resistance) interacting with temperature and plant stages. The higher level of HTAP resistance, the earlier in the growth stage and/or under the lower a temperature range does it work. It is in a relative sense in comparison with a highly susceptible reaction (just vigorously sporulating rust pustule, no necrotic stripes). Many fields of cultivars with moderate levels of HTAP resistance look very bad this year, but we have not seen such cultivars becoming completely susceptible. Cultivars with single *effective* all-stage resistance genes, combination of all stage resistance genes, high-level of HTAP resistance, and combination of effective all-stage resistance and HTAP resistance genes have held well this year.

Barley Stripe Rust

Stripe rust is till very low on barley in commercial fields. Most of checked barley fields were rust free. We found stripe rust on a couple of spring barley entries in our nurseries in Lind (Adams County), WA.

Wheat Leaf Rust

Wheat leaf rust was found in the Variety Trials at the Lind Experiment Station only on a hard red winter wheat cultivar, Declo.

In a field of hard red winter wheat cultivar Farnum, between Pasco and Connell (Franklin County) WA, leaf rust had severities of 5 to 40% and more than 20% incidence. Rust occurred very early from lower leaves and has mostly turned to black telia. Stripe rust in this field is very low. The crop reached late dough stage. The leaf rust damage is limited as the crop had well filled grains. Leaf rust (uredinial stage) was also found in a neighboring field of hard red winter wheat Bauermeister at very low incidence level (<1%). In this field, stripe rust of resistant reactions was common.

Stem Rust

No more news about stem rust since the last report on June 9 that rust on barberry plants was identified as stem rust in greenhouse testing.