CEREAL RUST BULLETIN

Report No. 8

July 21, 1999

Issued by:

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- Leaf rust is more severe than in recent years on both winter wheat and spring wheat in the northern Great Plains.
- Stem rust also is more prevalent in the northern Great Plains than in recent years - some yield losses may occur in winter wheat in South Dakota.
- Stem rust is common on barley in South Dakota and North Dakota, and is unusually prevalent on *Hordeum jubatum* this year.

The winter wheat harvest has begun from southwestern New York to northern South Dakota. Spring-sown grains in the northern Great Plains are one to two weeks behind normal crop development.

Wheat stem rust. During the second week of July, stem rust severities of 5-80% were reported in a winter wheat field of 2137 in central South Dakota. A significant yield loss to stem rust is expected in this field. In other fields in central South Dakota, trace to 20% severities were observed, but incidence was low. In mid-July, trace to 20% severities were observed in winter wheat plots in east central South Dakota and southeastern North Dakota. By mid-July, check plots of highly susceptible spring wheat cultivars such as Baart had 20% stem rust severities in south central Minnesota and east central South Dakota. Traces of stem rust were found in plots of the spring wheat cultivar Max in southeastern North Dakota.

Stem rust is unusually prevalent this year. The number of stem rust samples received at the Cereal Disease Lab this year is twice as great as in recent years. The increased severity of stem rust can be attributed to the large amount of inoculum produced on winter wheat cultivars, e.g. 2137, farther south in the Central Plains and to the temperature and moisture, which have been ideal for stem rust infection in the Northern Plains this year. If current spring wheat cultivars were susceptible to stem rust, a serious epidemic with substantial yield losses would have occurred.

Wheat leaf rust. As indicated in the previous Cereal Rust Bulletins, leaf rust was severe on winter wheat and is also severe on many of the spring wheats in the Northern Plains this year. By mid-July, 40% severities were common on flag leaves of spring wheat cultivars, e.g., Oxen, growing in plots in west central Minnesota. In spring wheat fields, 20% severities at the early

berry stage were common throughout the west central Minnesota and east central South Dakota. This year, yield losses to leaf rust are expected in both winter and spring wheats in the Northern Plains.

In mid-July, leaf rust was increasing on spring wheats in western Washington. East of the Cascades in Washington, leaf rust was very light. The cool dry conditions in early spring were not conducive for leaf rust to develop.

Wheat stripe rust. During mid-July, 100% stripe rust severities were reported on susceptible spring wheat cultivars in the Mount Vernon area of western Washington. In mid-July, wheat stripe rust was increasing in spring wheat fields in the Palouse region of Washington, but the adult plant resistance of commercial cultivars should minimize losses.

In early July, significant amounts of wheat stripe rust were reported in nurseries in the Bozeman area of Montana.

Oat stem rust. By mid-July, trace to 20% severities of oat stem rust were reported in plots and fields from south central Minnesota to central North Dakota. The 20% severities represented foci of oat stem rust in plots throughout the Northern Plains. The widespread distribution of oat stem rust in the Northern Plains this year was unexpected, because stem rust was lighter than normal on oats in the southern U.S., which is the source of inoculum for northern states.

Oat crown rust. During mid-July, crown rust severities ranged from 0 to 20% in oat fields and trace to 60% on flag leaves in plots in northeastern South Dakota and west central Minnesota. On wild oat (*Avena fatua*), rust severities ranged from trace to 20% severity. This year, throughout the upper Midwest, crown rust is lighter than normal and covered a smaller area because of the cooler than normal weather this spring which decreased the amount of infections from buckthorn, the alternate host of oat crown rust.

Barley stem rust. By mid-July, traces of stem rust were common on both 2 and 6-rowed barleys growing in plots and in fields in the southern part of the Red Valley of the North. In early July, trace to 50% severities were reported on 6-rowed barley in a north central South Dakota field. Again, most of these barley rust infections could be due to the increase in stem rust inoculum from the Central Plains as described in the wheat stem rust section.

In mid-July, trace to 10% stem rust severities were reported on wild barley (*Hordeum jubatum*) plants growing alongside the roadway in eastern South Dakota. This was the most extensive stem rust observed on wild barley in this area in the last 5 years.

Barley leaf rust. In mid-July, trace to 10% leaf rust severities were observed in barley plots in south central Minnesota, east central South Dakota and southeastern North Dakota.

Stripe rust on barley. In mid-July, stripe rust on barley was increasing in the Pacific Northwest, but there was much less rust than last year. The dry fall and dry May, which is the critical month for rust development, were not conducive for the disease. Losses to stripe rust on barley will be significantly less than last year in the Pacific Northwest.

Barley stripe rust was virtually non-existent in Idaho this year, with the exception of a severely diseased field of spring barley in eastern Idaho.

In early July, trace amounts of stripe rust were reported in the Bozeman area of Montana.

Rye stem rust. There have been no new reports of rye stem rust since CRB #3 (http://www.cdl.umn.edu/CRB/99CRB/99crb3.html).

Rye leaf rust. By mid-July, 60% severities were observed on the flag leaves of spring rye in plots in west central Minnesota.

Stem rust on barberry. There have been no new reports of stem rust on barberry since the CRB #6 (http://www.cdl.umn.edu/CRB/99CRB/99crb6.html).

Other grasses. In mid-July, 10% severities were common on *Elytrigia* (Agropyron) *repens* (quackgrass) in eastern and central North Dakota.