# CEREAL RUST BULLETIN

**Report No. 6**
June 15, 2016

*Issued by:*

**Cereal Disease Laboratory**
U.S. Department of Agriculture
Agricultural Research Service
1551 Lindig St, University of Minnesota
St. Paul, MN 55108-6052
(612) 625-6299 FAX (651) 649-5054
Mark.Hughes@ars.usda.gov

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- Wheat leaf rust was increasing significantly in Nebraska.
- Wheat stripe found on winter wheat in North Dakota.
- Oat crown rust has spread throughout the oat borders in the Matt Moore Buckthorn Nursery at St Paul.
- Barley leaf rust found in plots in southeastern Minnesota.

*For original, detailed reports from our cooperators and CDL staff, please visit the Cereal Rust Situation (CRS) reports page on the CDL website or click the CRS link found throughout the bulletin.*

Much of the Great Plains was relatively dry the week ending June 11 with the exception of the northern tier of states. Tropical storm Colin dropped considerable rain on Florida and coastal areas in the southern Atlantic states. Abnormally dry conditions continued in the Pacific Northwest. Temperatures were at least 10 degrees about average in the northern Plains. The widespread warm, dry conditions in the country were conducive for winter wheat maturation.

Nationally, 61% of the winter wheat crop was reported in good to excellent condition, 18 percentage points ahead of last year at this time. Ninety six percent of the winter wheat crop was heading or beyond by June 12. By week's end 11% of the winter wheat crop was harvested nationally. Seventy nine percent of the spring wheat crop was rated as good to excellent, 9 percentage points ahead of last year. By June 12, 52% of the oat crop was at or beyond heading, 6% ahead of the 5-year average. Ninety five percent of the barley crop was emerged by June 12, six percentage points ahead of the 5-year average. Seventy eight percent of the barley crop was reported in good to excellent condition, 3 percentage points ahead last year.

**Wheat stem rust.** There have been no new reports of wheat stem rust since the last bulletin (see CRB #5). Wheat stem rust has been found in Texas, Louisiana, Mississippi and Georgia to date. Race QFCSC has been identified from collections made in plots and a commercial field in Texas and nurseries in Louisiana and Georgia. Race QFCSC is the most commonly identified wheat stem rust race in the U.S. the last decade.

**Wheat stem rust map.** *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

**Wheat leaf rust.** Wheat leaf rust is widespread from the southern and central Great Plains to the east coast and as far north as North Dakota (see wheat leaf rust observation map). Wheat leaf rust is generally at low levels, however, it was increasing significantly in Nebraska.

*Nebraska* – In nurseries in southeastern Nebraska at Lincoln and Mead leaf rust incidence was 100% with severities between 70-100%. Many flag leaves in plots at Lincoln had both wheat leaf rust and wheat stripe rust. Wheat leaf

rust was the predominant disease in the Mead plots. With warming temperatures wheat stripe rust development will slow in the state while wheat leaf rust development will increase. Previously, trace amounts of wheat leaf rust were found in plots at Lincoln in southeastern Nebraska and low levels in the Panhandle, south central and eastern Nebraska (see CRB #2, #3, CRS).

*North Dakota* – Wheat leaf rust was found in a winter wheat plot at Fargo in eastern North Dakota on June 8.

*Minnesota* – There have been no new reports of wheat leaf rust in the state since the last bulletin when wheat leaf rust was reported at trace levels in plots at St. Paul in southeastern Minnesota on June 1.

*Wisconsin* – There have been no new reports of wheat leaf rust in the state since it was reported at trace levels in fields in southeastern Wisconsin in early May.

*New York* – There have been no new reports of wheat leaf rust in the state since it was reported at low levels in nurseries at Aurora and Ithaca in central New York in late May.

*Washington* – Wheat leaf rust was found in a nursery at Mt. Vernon in northwestern Washington on June 2.

**Wheat leaf rust races identified to date from 2016 collections.**

| Virulence code | Virulences | State | No. of isolates |
|---|---|---|---|
| BBBDB | 14a, | NC | |
| MBDSB | 1,3,17,B,10,14a, | TX | 2 |
| MBDSD | 1,3,17,B,10,14a,39 | KS, LA, TX | 17 |
| MBPSB | 1,3,3ka,17,30,B,10,14a, | LA,TX | 11 |
| MBTNB | 1,3,3ka,11,17,30,B,14a, | NC | 8 |
| MCDSD | 1,3,26,17,B,10,14a,39 | TX | 1 |
| MCDTB | 1,3,26,17,B,10,14a,18, | TX | 1 |
| MCPSB | 1,3,26,3ka,17,30,B,10,14a, | TX | 1 |
| MCTNB | 1,3,26,3ka,11,17,30,B,14a, | NC | 3 |
| MDTSB | 1,3,24,3ka,11,17,30,B,10,14a, | TX | 1 |
| MFGJG | 1,3,24,26,11,10,14a,28 | NC | 1 |
| MGPSB | 1,3,16,3ka,17,30,B,10,14a, | TX | 2 |
| MGPSD | 1,3,16,3ka,17,30,B,10,14a,39 | LA | 1 |
| MLDSB | 1,3,9,17,B,10,14a, | NC | 1 |
| MLDSD | 1,3,9,17,B,10,14a,39 | NC, TX | 2 |
| MLPSD | 1,3,9,3ka,17,30,B,10,14a,39 | AR, KS, NC, TX | 14 |
| MMDSD | 1,3,9,26,17,B,10,14a,39 | TX | 1 |
| MMNSD | 1,3,9,26,3ka,17,B,10,14a,39 | TX | 1 |
| MMPSD | 1,3,9,26,3ka,17,30,B,10,14a,39 | KS, TX | 8 |
| MNDSD | 1,3,9,24,17,B,10,14a,39 | TX | 1 |
| MNPSD | 1,3,9,24,3ka,17,30,B,10,14a,39 | AR, KS, LA, TX | 15 |
| MPPSD | 1,3,9,24,26,3ka,17,30,B,10,14a,39 | TX | 3 |
| MPTSD | 1,3,9,24,26,3ka,11,17,30,B,10,14a,39 | TX | 1 |
| PBDQJ | 1,2c,3,17,B,10,28,39 | TX | 1 |
| PBJQJ | 1,2c,3,11,17,B,10,28,39 | KS | 1 |
| TBBGJ | 1,2a,2c,3,10,28,39 | TX | 1 |
| TBBGS | 1,2a,2c,3,10,21,28,39 | TX | 1 |
| TBNJJ | 1,2a,2c,3,3ka,17,10,14a,28,39 | TX | 1 |
| TBRKG | 1,2a,2c,3,3ka,11,30,10,14a,18,28 | MS | 1 |
| TBRKJ | 1,2a,2c,3,3ka,11,30,10,14a,18,28,39 | MS | 1 |
| TBTNB | 1,2a,2c,3,3ka,11,17,30,B,14a, | NC | 2 |

| | | | |
|---|---|---|---|
| TCRKG | 1,2a,2c,3,26,3ka,11,30,10,14a,18,28 | MS, NC, SC, VA | 4 |
| TCTKG | 1,2a,2c,3,26,3ka,11,17,30,10,14a,18,28 | SC | 1 |
| TCTNB | 1,2a,2c,3,26,3ka,11,17,30,B,14a, | NC | 3 |
| TCTSB | 1,2a,2c,3,26,3ka,11,17,30,B,10,14a, | SC | 1 |
| TDTSB | 1,2a,2c,3,24,3ka,11,17,30,B,10,14a, | AR, NC | 2 |
| TLPSD | 1,2a,2c,3,9,3ka,17,30,B,10,14a,39 | TX | 1 |
| TNBGJ | 1,2a,2c,3,9,24,10,28,39 | KS, NC, TX | 13 |
| TNBJJ | 1,2a,2c,3,9,24,10,14a,28,39 | LA, TX | 11 |
| TNRJJ | 1,2a,2c,3,9,24,3ka,11,30,10,14a,28,39 | TX | 1 |
| Total | | | 142 |

**Wheat leaf rust map.** *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

**Wheat cultivar *Lr* gene postulation database.** *Please visit*: Leaf rust resistance gene postulation in current U.S. wheat cultivars

**2015 wheat leaf rust survey summary and results**. Please visit: Wheat leaf rust race survey results.

**Wheat stripe rust**. Wheat stripe rust was very widespread across the U.S., having been reported in 31 states to date (see wheat stripe rust observation map). In many areas the application of fungicides and use of resistant cultivars mitigated the heavy stripe rust disease pressure.

*Washington*– There have been no new reports from the state since stripe rust was reported in late May at high severity in nurseries in southeastern Washington and at low levels in commercial fields due to the use of resistant cultivars and applications of fungicides. A few fields, however, had severities from 20% to 60% (see CRS).

*Idaho* – There have been no new reports from the state since the last bulletin when stripe rust was reported on the triticale cultivar Forerunner the third week of May. Previously, stripe was reported from south central to eastern Idaho (see wheat stripe rust observation map). Stripe rust was often found on the soft white winter wheat cultivar Brundage.

*Ohio* – There have been no new reports form the state since the last bulletin when stripe rust was reported as having spread across the state and was particularly severe in areas in the southwestern part of the state. This was the most widespread and severe stripe rust had been in the state in 13 years (see CRS). Some growers had applied fungicides.

*Michigan* – There have been no new reports from the state since Cereal Rust Bulletin #3 when a single wheat stripe rust infection was reported in a nursery line at East Lansing in early May. Conditions had been favorable for stripe rust development.

*New York* – There have been no new reports from the state since the last bulletin when it was reported that stripe rust was found throughout a winter wheat commercial field at Weedsport in central New York on May 27 (see CRB #5).

*Colorado* – There have been no new reports from the state since the last bulletin when stripe rust was reported as widespread across the state, but at generally low levels due to the application of fungicides. Anticipated warm, drier conditions likely limited further stripe rust development and spread.

*Nebraska* – By early June, wheat stripe rust had increased significantly in all wheat growing areas in the state. Wheat stripe rust was severe and widespread in Cheyenne County in the Nebraska Panhandle. Winter wheat was just starting to head. In nurseries in southeastern Nebraska at Lincoln and Mead stripe rust incidence was 100% with severities between 70-100%. Many flag leaves in plots at Lincoln had both wheat

leaf rust and wheat stripe rust. Wheat leaf rust was the predominant disease in the Mead plots. With warmer temperatures stripe rust development in the state will likely slow considerably.

*Wyoming* – There have been no new reports from the state since the last bulletin when it was reported that stripe rust was found in 18 of the 87 sites visited in southeastern Wyoming with disease pressure highest in southeastern Goshen County and northern Laramie County. Anticipated warm and dry conditions were expected to limit further stripe rust development.

*South Dakota* – There have been no new reports from the state since the last bulletin when stripe rust was reported in nearly all fields in eastern, central and western South Dakota scouted the fourth week of May. Stripe was just beginning to develop in most fields while some fields had moderate to severe levels.

*North Dakota* – Stripe rust was found in winter wheat at Langdon in northeastern North Dakota in early June. It was also reported in commercial winter wheat fields in north central part of the state. Stripe rust has not yet been reported on spring wheat. Previously, stripe rust was reported in nurseries in eastern and southwestern North Dakota the fourth week of May.

*Minnesota* – Wheat stripe rust was found at variable incidences and severities in winter wheat nurseries in central, south central and southeastern Minnesota in early June. The wheat was just heading. Previously, wheat stripe rust at 100% incidence and relatively high severity was reported in nurseries in southwestern Minnesota in late May. Stripe was also previously reported in a commercial field in northwestern Minnesota and nursery in southeastern Minnesota.

*Wisconsin* – There have been no new reports from the state since the last bulletin when wheat stripe rust was reported as increasing in incidence in the nursery at Sharon but severities were low, while at Arlington, stripe rust was found at high incidence and severity on susceptible cultivars and was appearing on the flag leaves. Both locations are in southern Wisconsin. Conditions had been favorable for stripe rust development. Stripe rust was reported at generally at low levels in nurseries at Fon du Lac and Chilton in eastern Wisconsin in late May.

*Ontario, Canada* – There have been no new reports from the province since Cereal Rust Bulletin #4 when wheat stripe rust was reported in commercial fields of susceptible cultivars, e.g. P25R46, Emperor and Branson in most of southwestern and south central Ontario by late May (see CRS, CRB #5).

*Manitoba, Canada* – Stripe rust was found in a commercial winter wheat field near Gladstone in south central Manitoba in early June. The rust was found in the lower canopy at low incidence. Conditions had been favorable for stripe rust development. Wheat ranged from flag leaf emerged to early heading.

**Please send wheat and barley stripe rust collections as soon as possible after collection to:**

Dr. Xianming Chen
USDA-ARS
361 Johnson Hall
P.O. Box 646430
Washington State University
Pullman, WA 99164-6430
email: xianming@wsu.edu

***Note**:* Stripe rust collections are vulnerable to heat and do not survive long at warm temperatures; therefore, if shipment of collections for race identification is delayed their viability will be greatly reduced. An overnight courier service is preferred for sending stripe rust collections.

**Wheat stripe rust map.** *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

**Oat stem rust.** There have been no new reports of oat stem rust since Cereal Rust Bulletin #2. Races TJJ and TJS have been identified from collections made from *Avena strigosa* (black oat) used in watermelon windbreaks and from a collection made in a nursery at Castroville in south Texas. Races TJN and TGN have been identified from collections made in a nursery at Corpus Christi in southeastern Texas. Previously, oat stem rust was reported in plots in southeastern Louisiana and south Texas (see CRS).

**Oat stem rust map.** *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

**Oat crown rust.** Oat crown rust had spread throughout spreader rows in the Matt Moore Buckthorn Nursery at St Paul, Minnesota by June 14 after the first infections appeared on June 1. The initial infections were from aecia on the common buckthorn in the nursery. Oat crown rust has now been found in Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, North Carolina and Minnesota. Crown rust had reached high incidence and severity in nurseries in Texas and Louisiana.

**Oat crown rust map.** *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

**Barley leaf rust.** Barley leaf rust was found in nurseries at St Paul in southeastern Minnesota on May 31. Previously, barley leaf rust was reported in southwestern Minnesota, northeastern Alabama, central New York, south Texas, eastern shore and eastern Virginia, western Kentucky and central North Carolina (see CRS, CRB #4, CRB #5).

**Barley leaf rust map.** *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757

**Barley stripe rust.** There have been no new barley stripe rust reports since Cereal Rust Bulletin #4 when it was reported on AB Voyager in Twin Falls County in south central Idaho the first week of May.

**Barley crown rust –** There have been no new barley crown rust since high levels of barley crown rust were reported on *Elymus canadanesis* near Vicksburg in western Mississippi the third week of May.