CEREAL RUST BULLETIN

Report No. 5
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- Wheat stem rust was found across the state of Louisiana.
- Wheat leaf rust was at high levels in nurseries in Virginia.
- Wheat stripe is widespread and severe in Ohio.
- Wheat stripe rust has now been reported in 31 states.
- Oat crown rust has appeared on oat in the Matt Moore Buckthorn Nursery at St Paul.
- Barley leaf rust at significant levels was found in nurseries in southwestern Minnesota.
- Aecia were found on common barberry in southeastern Minnesota and south central and southeastern Wisconsin.
- Aecia were appearing on common buckthorn in southern Minnesota and throughout New York state.

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.

Heavy showers and locally severe thunderstorms occurred across the nation's mid-section the past week. Wet weather in the 0southern Plains impacted the winter wheat harvest in some areas. Much of the Southeast and Southwest experienced dry weather favorable for fieldwork. Tropical storm Bonnie impacted areas of South Carolina with locally heavy rainfall and impacted Georgia to a lesser extent. Warm temperatures from the Great Lakes to the east coast promoted rapid crop development.

Nationally, 63% of the winter wheat crop was reported in good to excellent condition, 19 percentage points ahead of last year at this time. Eighty four percent of the winter wheat crop was heading or beyond by May 29. Eighty eight percent of the spring wheat crop was emerged by May 29, twenty-two percentage points ahead of the 5-year average. By May 29, 95% of the oat crop was emerged, 9% ahead of the 5-year average. Ninety seven percent of the barley crop was planted by May 29, nine percentage points ahead of the 5-year average. Eighty eight percent of the barley crop had emerged, 19 percentage points ahead of the 5-year average.

Wheat stem rust. Wheat stem rust had been found across the state of Louisiana by the fourth week of May. As is typical, the wheat stem rust arrived late in the season. In nurseries at Crowley in south central Louisiana incidence and severity were high. Stem rust was at moderate levels in nurseries at Jeanerette (south central) and Baton Rouge (southeastern) while at lower levels at Alexandria (central) and Winnsboro (northeastern). A commercial field of Progeny 870 in northwestern Louisiana was heavily infected with wheat stem rust and will likely result in significant yield loss. Previously, wheat stem rust was reported in Texas, Louisiana, Mississippi and Georgia, generally at low levels (see CRS). 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 Virginia and as far north as southern Wisconsin and southern Minnesota (see wheat leaf rust observation map). While wheat leaf rust is generally at low levels, however, it was at high levels in nurseries in Virginia.

Kansas – Low levels of wheat leaf rust were found in south central Kansas the second week of May. Wheat was in grain filling growth stages.

Nebraska – Wheat leaf rust was found on triticale in plots at Lincoln the third week of May. 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).

Minnesota – Wheat leaf rust was found at trace to low levels in the hard red winter wheat NRPN yield plots at St. Paul in southeastern Minnesota on June 1. Uredinia were found on the lower leaves.

Kentucky – Wheat leaf rust was found in plots in western Kentucky in early May.

Illinois – Wheat leaf rust was found in plots in southern Illinois in early May.

Wisconsin – Wheat leaf rust was found at trace levels in fields in southeastern Wisconsin in early May.

New York – Very low levels of wheat leaf rust were found in nurseries at Aurora and Ithaca in central New York by late May.

Georgia – Wheat leaf rust has been found in four different nursery locations from south central to northwestern Georgia. Winter wheat harvest is now underway in the state.

North Carolina – There have been no new reports from the state since the first bulletin when leaf rust was widespread, unusually early and at heavy levels across the Coastal Plain of North Carolina due to the warm winter.

Virginia – Wheat leaf rust was widespread in nurseries at Blacksburg in western Virginia on May 28. Leaf rust on flag leaves of susceptible lines had reached around 90% severity. Previously, wheat leaf rust was reported as widespread with generally high severities in nurseries in eastern Virginia (see CRS, CRB #4).

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 is very widespread across the U.S., having been reported in 31 states to date (see wheat stripe rust observation map). Wheat stripe rust has now been found in North Dakota, about 10 days earlier than it appeared last year. In Ohio, stripe rust is the most widespread and severe it has been in the last 13 years. Similarly, stripe is the most severe and widespread in southwestern and south central Ontario than in the last 25 years. Stripe rust is widespread in a commercial field in central New York. In many areas the application of fungicides and use of resistant cultivars has mitigated the heavy stripe rust disease pressure.

Washington, Oregon – Stripe rust had reached more than 90% severity on susceptible winter wheat cultivars and less than 1% on spring wheat cultivars in nurseries near Pullman in southeastern Washington by May 25. The situation was similar in nurseries at Lind in southeastern Washington where severities had reached up to 80% on winter wheat cultivars and had appeared on spring wheat. Fields in southeastern Washington and western Idaho were surveyed on May 25. Stripe rust was found in many fields, generally at low levels due to use of resistant cultivars and applications of fungicides. A few fields, however, had severities from 20% to 60% (see CRS). Cool, wet conditions have been favorable for stripe rust development and will likely continue to be so the next two weeks. Winter wheat ranged from Feekes 10 to Feekes 10.5.4 (see Feekes scale) while spring wheat and barley ranged from Feekes 1 to Feekes 8.

Idaho – Stripe rust was found 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.

Florida – Wheat stripe rust was found in a nursery of the cultivar Quincy in Gadsden County in the northern Panhandle in late April.

Kentucky – Stripe rust was widespread across western Kentucky in late April and early May.

Illinois – Stripe rust was widespread across southern Illinois in early May.

Indiana – There have been no new reports from the state since Cereal Rust Bulletin #2 when stripe rust, at low incidence and severity, was confirmed in a commercial field in Posey County in southwestern Indiana the third week of April.

Ohio – Stripe rust was spreading across the state by the fourth week of May and was particularly severe in areas in the southwestern part of the state. This is the most widespread and severe stripe rust has been in the state in 13 years (see CRS). Some growers have 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.

North Carolina – There have been no new reports from the state since the first bulletin when low to medium levels of stripe were reported in a few fields in northeastern North Carolina and in the central Coastal Plain (see CRB #1).

Virginia – Wheat stripe rust was widespread in nurseries at Blacksburg in western Virginia on May 28, but had not yet reached high severities. Previously, stripe rust was reported in nurseries in southeastern, eastern shore and eastern Virginia (see CRS, CRB #4).

Maryland, Delaware – There have been no new reports from the state since Cereal Rust Bulletin #3 when stripe rust was reported along the eastern shore of Maryland and was found in nurseries in southeastern Delaware in late April.

New York – Wheat stripe rust was found throughout a winter wheat commercial field at Weedsport in central New York on May 27. The rust was found at all levels of the canopy, telia were also present. It seems likely the stripe rust overwintered in the field. The wheat heads were fully emerged, but not yet at anthesis. To date, stripe has not yet been observed in any other commercial fields or nurseries in the state. Stripe rust had only been observed at trace levels in the state the past decade until this year.

Oklahoma – Some wheat stripe rust was still actively sporulating in areas of northwestern Oklahoma on the third week of May, however, most wheat in the state, except for the Panhandle, no longer had leaves available for infection. Wheat harvest is underway in areas of the state.

Kansas – There have been no new reports from the state since the last bulletin when stripe was reported as severe in many fields in the state not treated with fungicides (see CRB #4). Many growers were applying fungicides to control stripe rust.

Colorado – Stripe rust is now widespread across the state, but at generally low levels due to the application of fungicides. The cool, wet weather was conducive for stripe rust development, but warm, dry weather is forecasted the next week and will likely limit additional stripe rust development and spread. Previously, stripe rust was reported in many areas in the eastern Colorado as well Mesa County in western Colorado (see CRS).

Nebraska –Most fields surveyed in southeastern and south central part of the state generally had little or no disease on May 25. In south central Nebraska, however, stripe rust was found at low to moderate levels with several hot spots in Thayer County and was severe in one field in Nuckolls County. Stripe rust was widespread, but mostly at low levels across southern Nebraska, including southern parts of the Panhandle in early Mary. West central areas and the Panhandle are at highest risk to stripe rust development as temperatures are cooler, particularly at night and there has been moisture.

Wyoming – In a survey of the winter wheat area of southeastern Wyoming, stripe rust was found in 18 of the 87 sites visited. Stripe was just beginning to appear and the disease pressure was highest in southeastern Goshen County and northern Laramie County. Warm and dry conditions are soon expected and this may limit further stripe rust development. Several growers in the area had applied fungicides.

South Dakota – Stripe rust was found 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. Anticipated rains will be conducive for further development. Winter wheat ranged from beginning to head to flowering. Stripe rust was first reported in the state on April 6 in a field in central South Dakota (see CRB #2, CRS).

North Dakota – Stripe rust was confirmed in nurseries at Fargo and at Hettinger in eastern and southwestern North Dakota, respectively, on May 23. The appearance of stripe rust in the state is about 10 days earlier than last year.

Minnesota – Most winter wheat cultivars in nurseries at Lamberton in southwestern Minnesota had some wheat stripe rust, many with 100% incidence and some at relatively high severity by late May. Infections were beginning to appear on spring wheat. Wheat stripe rust was found at low levels on upper leaves of winter wheat plots planted as a border for a barley test on June 1. Previously, stripe rust was reported in a commercial field in northwestern Minnesota and nursery in southeastern Minnesota.

Wisconsin – Wheat stripe rust was 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. Wheat ranged from Feekes 8 to 10. Stripe rust was first found in the nurseries on May 11. Conditions have been favorable for stripe rust development. Stripe rust was generally at low levels in nurseries at Fon du Lac in eastern Wisconsin on May 27. It appears stripe rust had been in the nursery for quite a while and may have overwintered there. At

Chilton, also in eastern Wisconsin, stripe incidence was higher than at Fon du Lac, but severity was generally low. There were several hot spots in the nursery as well as in commercial fields nearby. Predicted wet weather will favor further development.

Ontario, Canada – Wheat stripe rust had been found 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). The stripe rust developed rapidly in mid to late May. Stripe rust in fields with tolerant cultivars or had been sprayed with fungicides had reduced incidence and severity. This is most severe and widespread stripe rust has been observed in the past 25 years. Winter wheat ranged from flag leaf half emerged to head half emerged while spring wheat was in tillering stage.

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

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***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. Race TJN has 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 first appeared on oat in the Matt Moore Buckthorn Nursery at St Paul, Minnesota on June 1. The 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 on cultivars Thoroughbred and Charles in northeastern Alabama on May 12. Some barley cultivars in a nursery at Lamberton in southwestern Minnesota had considerable barley leaf rust by late May. Very low levels of barley leaf rust were found in nurseries at Aurora and Ithaca in central New York by late May. Previously, barley leaf rust was reported in south Texas, eastern shore and eastern Virginia, western Kentucky and central North Carolina (see CRS, CRB #4).

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 the last bulletin when it was reported on AB Voyager in Twin Falls County in south central Idaho the first week of May.

Barley crown rust – High levels of barley crown rust were found on *Elymus canadanesis* near Vicksburg in western Mississippi the third week of May.

Rust on barberry. Nearly mature aecia were found on common barberry (*Berberis vulgaris)* in south central Wisconsin on May 17. Aecia, at low levels, were just appearing on common barberry in southeastern Wisconsin by May 24. Previously, mature rust aecia were found on common barberry in southeastern Minnesota on May 16. Common barberry is the alternate host for stem rust.

Rust on buckthorn. Aecia were easily found on common buckthorn **(***Rhamnus cathartica*) in southern Minnesota by late May. Aecia were found statewide on buckthorn in New York by the end of May. Oat crown rust first appeared on oat in the Matt Moore Buckthorn Nursery at St Paul, Minnesota on June 1. Buckthorn is the alternate host for oat crown rust, aecia from buckthorn can infect oat resulting in oat crown rust.