



CEREAL RUST BULLETIN

Report No. 7
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Cereal Disease Laboratory

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- Wheat stem rust found in a nursery in Illinois and a commercial field in Indiana.
- Wheat leaf rust found at relatively high severities in Ohio.
- Wheat stripe rust disease pressure remains high in Washington.
- Oat stem rust found in a nursery in Illinois.
- Oat crown rust was severe in a nursery in South Dakota.
- Barley leaf rust was found in plots in central New York.

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.

Hot weather dominated much of the country this past week with the exception of the Pacific Northwest where cooler than normal conditions occurred. Locally heavy rains fell in the Midwest into the central Appalachians while scattered showers occurred in the Great Plains.

Nationally, 45% of the winter wheat crop was harvested by June 26, 4 percentage points ahead of the 5-year average. Sixty two percent of the winter wheat crop was reported in good to excellent condition. Fifty six percent of the spring wheat crop was at or beyond heading by June 26. Seventy two percent of the spring wheat crop was rated as good to excellent, the same as last year at this time. By June 26, 83% of the oat crop was at or beyond heading, 14% ahead of the 5-year average. Sixty seven percent of the oat crop was reported in good to excellent condition. Fifty five percent of the barley crop was at heading or beyond by June 26, 25 percentage points ahead of the 5-year average. Seventy five percent of the barley crop was reported in good to excellent condition, 2 percentage points ahead last year.

Wheat stem rust. Wheat stem rust was found on secondary growth in University of Illinois-Champaign/Urbana trial plots in east central Illinois on June 20. The rust was found on multiple plants in the plots with severities ranging from 5 to 20%. The wheat was at the soft dough stage. Wheat stem rust was found at trace levels in a winter wheat field in Blackford County in eastern Indiana the fourth week of June. The winter wheat was at milky ripe growth stage. Wheat stem rust has been found in Texas, Louisiana, Mississippi, Georgia, Illinois and Indiana to date. Race QFCSC has been identified from collections made in Texas, Louisiana, Mississippi 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 Great Plains to the east coast and as far north as North Dakota and the Great Lakes states (see [wheat leaf rust observation map](#)). Wheat leaf rust is generally at low levels, however, it has increased significantly in Nebraska and was found at moderate to high severities in Ohio.



Nebraska – There have been no new leaf rust reports from the state since the last bulletin when leaf rust was reported at 100% incidence with severities between 70-100% in nurseries in southeastern Nebraska in early June. Previously, trace amounts of wheat leaf rust were reported in plots at Lincoln in southeastern Nebraska and at low levels in the Panhandle, south central and eastern Nebraska (see [CRB #2](#), [#3](#), [CRS](#)). Harvest is now underway and 90% of the winter wheat was turning by June 26.

South Dakota – Low levels of wheat leaf rust were found on some winter wheat cultivars in nurseries at Volga in eastern South Dakota in late June. Winter wheat was at or beyond soft dough growth stage.

North Dakota – There have been no new reports from the state since the last bulletin when wheat leaf rust was reported in a winter wheat plot at Fargo in eastern North Dakota on June 8.

Minnesota – Leaf rust on wheat was observed in plots at Fergus Falls, Minnesota, June 25. The cultivar Marshall (*Lr2a*, *Lr10*, *Lr34*) had moderate level of severity on lower leaves, with uredinia starting to develop on flag leaves. Leaf rust was not seen on any other cultivar or breeding line. Previously, 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. Stripe rust has been the predominant rust in the state in 2016.

Ohio – Wheat leaf rust was found at severities of 50-80% in Champaign, Clark, Ashland and Wayne Counties the fourth week of June. These were the highest severities found in a recent survey of the Ohio Valley.

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 – There have been no new reports of wheat leaf rust in the state since it was reported 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	1
MBDSB	1,3,17,B,10,14a,	MS, TX	3
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,	MS, NC, VA	23
MBTSB	1,3,3ka,11,17,30,B,10,14a,	LA, MS	3
MCDSB	1,3,26,17,B,10,14a,	TX	1
MCSDS	1,3,26,17,B,10,14a,39	TX	1
MCPSB	1,3,26,3ka,17,30,B,10,14a,	TX	1
MCTNB	1,3,26,3ka,11,17,30,B,14a,	LA, MS, NC, TX, VA	11
MCTSB	1,3,26,3ka,11,17,30,B,10,14a,	MS	2
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	15
MMDSB	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	9
MNDSB	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	4
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	2
TBNJJ	1,2a,2c,3,3ka,17,10,14a,28,39	TX	3
TBRKG	1,2a,2c,3,3ka,11,30,10,14a,18,28	VA	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	4
TCRKG	1,2a,2c,3,26,3ka,11,30,10,14a,18,28	MS, NC, SC, VA	11
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
TDRJG	1,2a,2c,3,24,3ka,11,30,10,14a,28	MS	1
TDTSB	1,2a,2c,3,24,3ka,11,17,30,B,10,14a,	AR, NC	2
TFBJJ	1,2a,2c,3,24,26,10,14a,28,39	TX	1
TLPSD	1,2a,2c,3,9,3ka,17,30,B,10,14a,39	TX	1
TNBJG	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	12
TNRJJ	1,2a,2c,3,9,24,3ka,11,30,10,14a,28,39	TX	1
Total			190

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](#)

Wheat stripe rust. Wheat stripe rust was very widespread across the U.S. in 2016, reported in 31 states and 3 Canadian provinces to date (see [wheat stripe rust observation map](#)). Recent cool temperatures in the Pacific Northwest are conducive for continued stripe rust development there. In many areas the application of fungicides and use of resistant cultivars mitigated the heavy stripe rust disease pressure.

Washington – Warm weather in early June slowed stripe rust development in the state, however, much cooler weather after June 8 allowed stripe rust to develop, particularly on spring wheat. Winter wheat is approaching maturity and stripe rust on winter wheat was mostly controlled. Susceptible spring wheat in nurseries in southeastern Washington had severities of 80% or above the third week of June (see [CRS](#)). Favorable conditions are anticipated and disease pressure remains high.

Idaho – There have been no new reports from the state, previously, stripe was reported from western, southern to eastern Idaho. Stripe rust was often found on the soft white winter wheat cultivar Brundage.



Ohio – There have been no new stripe rust reports from the state, previously, 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 at least 13 years (see [CRS](#)). Winter wheat harvest is underway in areas of the state.

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 stripe rust was reported 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 stripe rust was reported as widespread across the state in late May, but at generally low levels due to the application of fungicides. Anticipated warm, drier conditions likely limited further stripe rust development and spread. Winter wheat harvest has begun in some areas of the state.

Nebraska – There have been no new stripe rust reports from the state since early June, when wheat stripe rust had increased significantly in all wheat growing areas in the state and was particularly severe and widespread in Cheyenne County in the Nebraska Panhandle. Winter wheat harvest is underway in areas of the state.

Wyoming – There have been no new reports from the state since stripe rust was reported in 18 of the 87 sites visited in southeastern Wyoming in late May. Anticipated warm and dry conditions were expected to limit further stripe rust development.

South Dakota – There have been no new stripe reports from the state since stripe rust was reported in nearly all fields in eastern, central and western South Dakota scouted the fourth week of May (see [CRS](#)).

North Dakota – There have been no new reports from the state since stripe rust was reported in winter wheat at Langdon in northeastern North Dakota in early June. Previously, it was also reported in commercial winter wheat fields in the north central part of the state and in nurseries in eastern and southwestern North Dakota the fourth week of May.

Minnesota – Stripe rust was still active in plots at St. Paul in southeastern Minnesota in late June despite recent warm temperatures. Previously, wheat stripe rust was reported at variable incidences and severities in winter wheat nurseries in central, south central and southeastern Minnesota in early June.

Wisconsin – There have been no new reports from the state since wheat stripe rust was reported as increasing in incidence in nurseries in southern Wisconsin and at generally low levels in nurseries 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 – There have been no new reports from the province since stripe rust was reported in a commercial winter wheat field in south central Manitoba in early June (see [CRS](#)).



Saskatchewan, Canada – Stripe rust was found in nurseries at Swift Current and Outlook in southern Saskatchewan and in commercial fields at Kandahar also in southern Saskatchewan the fourth week of June. Stripe rust was severe and widespread at Swift Current while at Outlook severities reached 60-100% on some cultivars including AC Radiant that carries *Yr10* that was effective in the province until 2013. At Kandahar, stripe rust was found on the cultivar CDC Buteo and was limited to the lower leaves (see [CRS](#)).

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. Oat stem rust was found in oat nurseries at Champaign in eastern Illinois on June 20. The severities ranged from 10 to 90% and the oat was at milky ripe growth stage. This is the first new report of oat stem rust since [Cereal Rust Bulletin #2](#). Races TGN, THS and TJS have been identified from collections made in nurseries in south Texas. Race TJJ has been identified from collections made from *Avena strigosa* (black oat) used in watermelon windbreaks. 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 was found on an oat plant growing in a wheat plot at Warsaw in eastern Virginia on May 10. Crown rust was severe in nurseries at Brookings in eastern South Dakota, while at the Northeast and Southeast Research Farms crown rust was found at low levels the fourth week of June. Oat crown rust at 30-50% severity was found in plots at Champaign in eastern Illinois the fourth week of June. Oat crown rust had spread throughout the nursery in the Matt Moore Buckthorn Nursery at St Paul, Minnesota by late June 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, Virginia, South Dakota, Illinois and Minnesota.

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 a nursery at Mead in eastern Nebraska on June 9. Low levels of barley leaf rust were found on the 2 row malting barley Conlon in plots at Aurora in central New York on June 14. 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](#)).

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.

Rye stem rust – Stem rust was found on rye in nurseries at Wooster in northeastern Ohio on June 22. Severities ranged from 1 to 20%.

