CEREAL RUST BULLETIN

Final Report for 2014
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- Wheat stem rust was not severe or widespread in 2014.
- Wheat leaf rust was at extremely low levels in the Central Plains in 2014.
- Wheat stripe rust was not as widespread in 2014 as in 2013 or as severe as 2012.
- There were very few reports of oat stem rust in 2014.
- Oat crown rust was severe in areas of southern Minnesota and eastern South Dakota.
- There were very few reports of barley leaf rust in 2014.
- *Thanks to those who contributed rust observations, comments and collections in 2014!*

Small grain development and spring fieldwork in the Great Plains and to the east was generally delayed due to the unusually cool late winter and early spring weather. Ongoing drought conditions in many areas of the central and southern Plains were a significant constraint to small grain production. Drought and freeze damage in early spring in southern U.S. may have delayed rust development and spread in the spring. Significant rainfall occurred in many areas of the Great Plains and to the east in mid-June to early July. The widespread rain hampered winter wheat harvest in the South and limited fieldwork in other areas.

In the Pacific Northwest small grain development was somewhat ahead of the 10-year averages. Hot dry weather dominated California and the Pacific Northwest areas.

Wheat stem rust. Wheat stem rust was not widespread or severe in the U.S. in 2014. It was only reported in nursery locations this season, i.e. in Texas, Louisiana, Arkansas, North Carolina, Nebraska, Kansas, South Dakota, Minnesota and Wisconsin. Wheat stem rust was first reported on April 7 at Weslaco in extreme southern Texas. To date, race QFCSC, the most commonly identified wheat stem rust race in recent years, was identified from all collections.

Rio Grande Valley, Texas - Wheat stem rust was found in sentinel plots of Morocco, Panola, Siouxland and Line E at Weslaco in extreme southern Texas on April 7. Severities ranged from <1% on Siouxland (stem rust pustules were found only on leaves) to 5% on Morocco with incidences from 10% on Siouxland to 90% on Morocco. Line E and Morocco were fully headed while Panola and Siouxland did not completely vernalize. In previous years barley, emmer and triticale were more commonly used in windbreaks for watermelons, currently more sorghum or sorghum-Sudangrass is used. This was the first report of wheat stem rust in the U.S. in 2014.

North Carolina - Numerous wheat stem rust foci were found in a misted scab nursery at Raleigh in central North Carolina in mid-May. Most of the infections were found on the line SS520 with lesser amounts on USG3592. Wheat stem rust is uncommon in North Carolina, but can appear in mid- to late May just prior to senescence. Wheat stem rust was not found in commercial fields in North Carolina in 2014.

Arkansas – Stem rust was found in late-maturing plots at Kibler and Fayetteville in northwestern Arkansas in early June. It was not reported elsewhere in the state in 2014. Generally, rust (leaf, stripe and stem) was found at lower levels than any of the last 26 years.

Nebraska – Stem rust was found on two lines (at hard dough stage) in a wheat nursery at Lincoln in southeastern Nebraska on June 13. Wheat stem rust was not reported in commercial fields in the state in 2014.

Kansas – Wheat stem rust at 100% incidence and approaching 30% severity was found in plots near Manhattan in northeastern Kansas in late June. Based on the samples it appears the stem rust had been in the plots for some time. Wheat stem rust was not reported in commercial fields in the state in 2014 and is not expected to impact yields.

Wisconsin – On June 26, stem rust was found on five plants in a single plot at Arlington in south central Wisconsin. Stem rust was not found in any other plots at the location. Stem rust was not found at any other sites in the state in 2014.

South Dakota – Trace levels of wheat stem rust were found in plots of the cultivar Rubidoux in Brookings County in eastern South Dakota the second week of July.

Minnesota – On July 10, trace to moderate levels of wheat stem rust were found in plots of the susceptible spring wheat cultivar Baart at Lamberton in southwestern Minnesota.

North Dakota – Wheat stem rust was found at trace levels on the susceptible spring cultivar Baart in plots at Langdon in the northeastern part of the state in early August.

Wheat leaf rust. Leaf rust was at very low levels in the central Great Plains in 2014 due to drought and very dry conditions. As a result wheat leaf rust inoculum for areas north and east was very limited. The cool spring delayed leaf rust development in many areas. In the Southeast and mid-Atlantic areas wheat leaf rust was more widespread, but generally at low levels with the exception of higher severities noted on the cultivar Shirley at some locations. By late June, leaf rust had appeared at low levels in South Dakota, Minnesota, Wisconsin and Michigan.

Texas – Wheat leaf rust was slowly developing in plots at Castroville in early March and by late March it was uniformly distributed in the lower canopy and mid-canopy of winter wheat spreader rows in nurseries at Castroville and Wharton, respectively. Warm temperatures and rains created conditions favorable for rust spread. The second week of April wheat leaf rust was moving into the flag leaves of susceptible wheat in irrigated plots at Castroville. At Beeville, where there were both winter and spring wheat plots, leaf rust increased on TAM 112 (Lr39/41) and in the spreader rows. Leaf rust developed on TAM 112 and in the spreader rows at College Station.

In a survey of north central Texas in late March and early April no rust was found in commercial fields and rust had not seen by consultants and extension agents in the areas. Typically, wheat leaf rust is found by this time in north central Texas. Low levels of leaf rust were reported as far north as 30 miles south of Dallas. Some cultivars found with leaf rust were Greer (*Lr39/41, Lr34, Lr37*), WB Cedar (*Lr14a, Lr37*) and Coronado (*Lr1, Lr10, Lr14a*). Most of the wheat was fully headed.

Ten of the 11 lines in plots at Weslaco in extreme southern Texas had wheat leaf rust the second week of April, Panola (*Lr11*) was the lone exception. Severities ranged from 3-40% with incidences from 20-90%. TAM 112 (*Lr39/41*) was rated at 15S while Jagalene (*Lr24*) had 60s on the flag leaves.

A rust survey covering the southern half of Texas to Baton Rogue in southeastern Louisiana was conducted between April 30 and May 5. Winter wheat fields visited along a west to east transect extending from Uvalde, Texas to Baton

Rouge, Louisiana varied from milk to soft dough stage. Of the eleven fields sampled leaf rust was found in all but one. Most of leaf rust samples had low severities (10-20%) and were taken from the edges of otherwise disease free fields. However, samples obtained from Zavala and Bastrop counties in Texas had high disease severity (50-80%) and prevalence (100%).

Louisiana – Wheat leaf rust was present at low incidence and severity in an early planted Baton Rouge nursery on March 18. Due to the cool winter and spring wheat leaf rust occurred late in the season and at lower levels than is typical in Louisiana. Leaf rust in plots developed in grain filling stages and did reach higher levels in late April and early May as the plants approached physiological maturity, but yield impact was minor.

Mississippi – Trace levels of wheat leaf rust were reported in Greenwood in the eastern Delta region in late April. As in Louisiana and Alabama, a very cool spring likely significantly delayed wheat leaf rust development.

Alabama – Leaf rust was found at trace levels in the state in 2014. The very cool spring likely impacted rust development.

Oklahoma – Other than the low levels of leaf rust found in one irrigated wheat field in central Oklahoma in early May and a single leaf rust pustule observed in late March, rust was not reported in the state in 2014. Drought conditions in the state coupled with high temperatures and wind were not been conducive for wheat or rust development. Seventy eight percent of the winter wheat crop was rated poor to very poor. Many fields were not harvested, however irrigated fields in the panhandle had better yield potential and a very few dryland fields appeared to have some yield potential.

Kansas – Persistent drought and high temperatures were not conducive for wheat or rust development in the state this season. Other than low levels of wheat leaf rust observed in plots in northeastern Kansas in late May, wheat leaf rust was not reported in the state. Winter wheat production in the state is forecasted to be down 26% from last year's crop and the lowest in 25 years. Yield is forecast at 28 bu/acre, 10 bushels below last year and the lowest since 1995.

Nebraska – In late May, a few pustules of wheat leaf rust were observed in Nuckolls County and was also confirmed in Clay County in south central Nebraska. These were the first confirmed reports of wheat leaf rust in the state in 2014. Only two pustules of leaf rust were found in a survey of fields in south central and southeastern areas of the state on June 4. The fields surveyed were virtually disease free. A majority of the fields in the south central area were severely drought stressed. The wheat was at soft to hard dough stage. On June 10, wheat leaf rust, at trace to low incidence with severities up to 30% on flag leaves, was found in plots at Lincoln in southeastern Nebraska. No rusts were observed in a survey of southwestern Nebraska and the southern and northern Panhandle June 17-19. Most fields were stressed due to a lack of moisture. Wheat ranged from milk to hard dough.

There was very little, if any, rust inoculum to the south in Kansas and Oklahoma where drought conditions were severe. The lack of inoculum to the south coupled with dry conditions in the state created conditions unfavorable for rust development in the state in 2014.

Arkansas – Fresh wheat leaf rust pustules were found on volunteer wheat at the experiment station at Marianna in the east central part of the state on March 20. No cereal rusts were found in plots throughout the state (Stuttgart, Marianna, Newport, Keiser, Fayetteville and Kibler) the second week of April. Wheat in the state ranged from Feekes 6 to Feekes 9. Traces of wheat leaf rust were observed on the cultivar Havoc at Marianna and Newport in eastern Arkansas the fourth week of May. Hot, dry and windy conditions during May were not conducive for rust development.

There was less rust in Arkansas than in any or the previous 26 years. Leaf rust generally developed just prior to maturity and likely did not cause any yield loss.

Georgia – Wheat leaf rust was widespread in a very early-planted (2 months earlier than normal recommendations) wheat plot in a nursery at Plains in southwestern Georgia on April 2. While leaf rust is usually found in this area and the severity level was high for this early in the season. Leaf rust was also found on the lower leaves of the most susceptible lines in another nursery 300 yards away. Wheat leaf rust had developed to severe levels on many lines in plots at Plains in southwestern Georgia by the third week in May. Plots of Shirley (postulated to have *Lr26* and *Lr18*) had higher levels of leaf rust than seen in previous years. Leaf rust was found in only a few commercial fields this season. The widespread use of fungicides and a long cool spring impacted wheat leaf rust development in the state.

*South Carolin*a – Leaf rust had developed rapidly in areas of northern South Carolina by the second week of May.

North Carolina – In eastern North Carolina, leaf rust continued to increase in plots at Kinston while at Ayden leaf rust was just beginning to appear the third week of May. Conditions in early May were conducive for leaf rust development. Plots of Shirley in North Carolina also had higher levels of leaf rust severity than in past years.

In tests at the USDA- ARS Cereal Disease Laboratory, DG Shirley had high infection type to leaf rust race TCRKG that is virulent to *Lr18* and *Lr26*. Marker data indicated the presence of the 1B/1R translocation in DG Shirley, indicating the presence of *Lr26*. DG Shirley has been postulated to also have *Lr18* based on the seedling leaf rust tests.

In 2013, virulence to *Lr26* was at 44% and virulence to *Lr18* was at 33% of the southeastern population. Races with virulence to both genes may be further increasing in frequency or a new race(s) with particular virulence to DG Shirley may be present.

Wheat leaf rust was at low to moderate levels in commercial fields in the Coastal Plain and Tidewater areas and heavy in the nurseries in Kinston and Plymouth in eastern North Carolina in 2014. Little loss due to leaf rust was expected in the state.

Virginia – A headrow in a nursery at Warsaw in eastern Virginia had low leaf rust incidence and low severity the third week of May. Low levels of wheat leaf rust were found in plots at Blacksburg in western Virginia on June 6.

Kentucky – Wheat leaf rust was widespread, but generally at low severity levels, in western Kentucky by late May. Most infections were found on the F-1 and F-2 leaves and occasionally on flag leaves. Wheat was at grain filling stages.

Tennessee – Wheat leaf rust was found in plots at Jackson in western Tennessee in early June. Wheat in the state was generally disease free this spring.

Illinois – Wheat leaf rust was found in a few plots at the Brownstown Research Farm in Fayette County in south central Illinois on June 6. No rust was found in surveys of Saline, Gallatin, White, Wayne and Clay Counties in southern Illinois the week of June 2. Wheat leaf rust at high incidence and severity was found on some cultivars in plots in Champaign County in east central Illinois in mid-June. The rust likely developed too late in the season to cause yield reductions.

Michigan – Wheat leaf rust, at low severity in the lower canopy, was found in a nursery at Mason in south central Michigan on June 5. Wheat had finished flowering with earliest lines at milk growth stage. Wheat leaf rust was widespread across the state by mid-June. By crop maturity flag leaf severities had reached 10% or more in fields not treated with fungicides.

New York – No cereal rusts were found on visits to fields and plots in eastern and central New York the fourth week of June.

Minnesota – A single pustule of wheat leaf rust was found in a winter wheat nursery at St. Paul in southeastern Minnesota on June 18 and by late June the rust was found at low levels in the nursery. Heavy rains were common in Minnesota the previous few weeks with many areas receiving record precipitation totals. On July 10, wheat leaf rust was observed at trace levels in plots of spring wheat in southern Minnesota. In a plot of Marshall wheat with *Lr2a*, *Lr10* and *Lr34*, heavy leaf rust infections were found. Plots of winter wheat had light to heavy leaf rust infections.

In early August, leaf rust was present at high severity in plots of susceptible wheat in west central Minnesota. Plots of cultivars and breeding lines varied between trace levels of leaf rust to high severity. Most wheat fields in west central Minnesota were close to complete maturity, however a number of fields still had green flag leaves. Leaf rust was present at low to moderate levels in wheat fields that still had green leaves. Leaf rust had not yet been found in northwestern Minnesota by August 5.

Wisconsin – On June 26, leaf rust was found in several winter wheat plots in a nursery in south central Wisconsin. Many plots had 100% incidence with 10% flag leaf severities. Wheat was approaching dough stage. Trace levels of leaf rust were observed in fields and plots in northeastern Wisconsin the second week of July. Leaf rust severities of 20% were found on flag leaves at early dough stage in unsprayed winter wheat fields along the Lake Michigan in northeastern Wisconsin in early August. This season wheat leaf rust was observed on several cultivars in wheat growing areas of Wisconsin. Flag leaf severities were 10% or less and the rust generally did not appear until late in the growing season. There will likely be little yield loss due to leaf rust in the state in 2014.

South Dakota – Leaf rust, at low incidence and severity, was found in a winter wheat nursery at Brookings in eastern South Dakota in late June. This was the first report of wheat leaf rust in the state in 2014. Leaf rust was still at low levels in winter wheat plots in Brookings County in eastern South Dakota the second week of July. Low levels of leaf rust were found in adjacent spring wheat plots.

North Dakota –Wheat leaf rust, at low levels with severities between 5 and 10%, was found on the lowest leaves in plots at Fargo in eastern North Dakota on July 2. Wheat leaf rust was found in one winter wheat plot at Minot in north central North Dakota the third week of July.

Wheat leaf rust was present at varying levels across central and eastern North Dakota the second week of August. In central North Dakota susceptible wheat cultivars in plots had high leaf rust severities while resistant cultivars and breeding lines had low to moderate severities. In northeastern North Dakota, susceptible cultivars in plots had moderate severity and resistant cultivars generally had low levels of rust. Cultivars such as Faller, Prosper and Barlow with *Lr21* had more leaf rust compared to other cultivars. Many wheat fields in eastern and central North Dakota were still very green the second week of August.

Wellington County, Ontario – A few pustules of wheat leaf rust were observed in variety plots in the Palmerston area in southern Ontario on June 18 (see CRS for full report from Albert Tenuta and Peter Johnson). This was the first report of wheat leaf rust in the province in 2014. Winter wheat was in grain filling stage. The extreme winter caused significant damage to the winter wheat crop resulting in about 10% of the crop being replanted or reseeded.

Wheat leaf rust races identified to date from 2014 collections.

Virulence code	Virulences	State	No. of isolates
MBDSB	1,3,17,B,10,14a,	TX	1
MBDSD	1,3,17,B,10,14a,39	TX	16
MBPSD	1,3,3ka,17,30,B,10,14a,39	TX	2
MBTNB	1,3,3ka,11,17,30,B,14a,	LA	1
MCDSB	1,3,26,17,B,10,14a,	TX	3
MCDSD	1,3,26,17,B,10,14a,39	TX	8
MCTNB	1,3,26,3ka,11,17,30,B,14a,	LA	1
MFNSB	1,3,24,26,3ka,17,B,10,14a,	TX	2
MFPSB	1,3,24,26,3ka,17,30,B,10,14a,	TX	1
MLDSD	1,3,9,17,B,10,14a,39	TX	5
MLPSD	1,3,9,3ka,17,30,B,10,14a,39	TX	7
MMDSD	1,3,9,26,17,B,10,14a,39	TX	1
MMPSD	1,3,9,26,3ka,17,30,B,10,14a,39	TX	7
PBDQJ	1,2c,3,17,B,10,28,39	TX	2
PBDSJ	1,2c,3,17,B,10,14a,28,39	TX	1
PLDDJ	1,2c,3,9,17,14a,28,39	TX	1
TBBGJ	1,2a,2c,3,10,28,39	TX	6
TBBGS	1,2a,2c,3,10,21,28,39	TX	1
TCLJG	1,2a,2c,3,26,3ka,10,14a,28	TX	1
TLBGJ	1,2a,2c,3,9,10,28,39	TX	1
TNBGJ	1,2a,2c,3,9,24,10,28,39	TX	12
TNBJJ	1,2a,2c,3,9,24,10,14a,28,39	TX	3
TPBGJ	1,2a,2c,3,9,24,26,10,28,39	TX	2
Total			85

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 not generally as widespread in 2014 as in 2013 or as severe as 2012. Drought conditions in the Central Plains limited rust development there. Stripe rust disease pressure was generally light in most areas of the Pacific Northwest where dry, warm conditions were common.

South Texas – Wheat stripe rust was found in the middle of a nursery field at Castroville in South Texas on March 7. The wheat was at Feekes stage 7-9. Conditions were conducive for further development and the rust spread throughout the irrigated field reaching 60s on flag leaves of some lines by March 26 and 70s on the susceptible cultivar Patton by April 9. Wheat leaf rust was competing with stripe rust on the upper leaves and with the warmer temperatures stripe rust development stopped. The stripe rust population in the plots did not appear to have *Yr17* virulence.

Low levels of stripe rust were reported in commercial fields as far north as 30 miles south of Dallas as well as areas to the south in early April. In a survey of north central Texas in late March and early April no rusts were found in commercial fields and consultants and extension agents in the areas had no reports of rust.

Louisiana – Low levels of stripe rust (<1% severity and prevalence) were observed on GACT7, a susceptible cultivar, in plots at Alexandria in central Louisiana in late March. Stripe rust at low incidence and severity was also observed in plots at Crowley in southwestern Louisiana. Traces of stripe rust had been found around the state by early April. High stripe rust severities were found in a single family of wheat headrows in plots at Baton Rogue in early April. The stripe rust had apparently been present for some time, but had not spread beyond the one family. There was generally very little disease pressure in the nursery. Wheat maturity was about 10 days behind the 10-year average.

Mississippi – A few stripe rust infected leaves were found on volunteer plants under a rainout shelter in Stoneville in the Delta region the last week of April. Most of the stripe rust had formed telia due to the warmer temperatures. As of May 3, stripe rust had not been confirmed in commercial fields or nurseries anywhere in the state.

Arkansas – A small wheat stripe rust hot spot was found in a plot of a known susceptible cultivar at Marianna in eastern Arkansas on April 30. This was the first report of stripe rust in the state in 2014. There were a few scattered reports of stripe rust in the state during the season, but there was no further development.

Kansas – A large stripe rust focus was found in plots of 2137 near Manhattan in northeastern Kansas in late May. The spread from the foci center suggested the stripe rust infection developed 3-6 weeks prior. Most wheat at the location was at milk stage. The stripe rust did not develop to any extent due to the warmer temperatures. Persistent drought and high temperatures in the state were not conducive for wheat or rust development in 2014.

South Dakota – Trace levels of wheat stripe rust were found in winter wheat plots at Brookings in eastern South Dakota on July 10. This was the first report of stripe rust in the state in 2014. Significant further development was not expected.

North Dakota – Stripe rust was found in a commercial field south of Minot in north central North Dakota and also on a few leaves in one plot at Fargo in eastern North Dakota the third week of July. Wheat stripe was present at very low incidence at a trace level in various cultivars in plots at Langdon in northeastern North Dakota the second week of August.

Colorado – Stripe rust, at low levels, was found in two commercial fields in Weld County in eastern Colorado in early June. Stripe rust developed to severe levels in Fort Collins along the Front Range of Colorado, but there was minimal infection in eastern Colorado in 2014.

Wisconsin – Several small stripe rust foci were found in plots at Arlington in south central Wisconsin on June 27. Incidence and severity were at very low levels. This contrasts to the past two seasons when stripe rust was found at high incidence and severity in plots at this point in the season. Stripe rust was not reported in other nurseries or in commercial fields in the state in 2014.

Virginia – One small wheat stripe rust foci was found in nursery headrows at Warsaw in eastern Virginia on June 3. Stripe rust was not reported elsewhere in the state.

Oregon – Stripe rust was found in plots near Corvallis in western Oregon in late March. Wheat stripe rust was reported on the soft white winter wheat cultivars Goetze, Kaseberg, Sy Ovation and Tubbs 06 in north and south areas of the Willamette Valley in early April. It appears stripe rust overwintered in the valley.

Stripe rust disease pressure was low in the western part of the state the third week of May. However, hot spots were observed in several fields.

In eastern Oregon, stripe rust hot spots were observed in the Hermiston and Pendelton-Ruggs nurseries while trace amounts were found in the Milton-Freewater nursery and stripe rust was also found in a commercial field in Sherman County in early May. Low levels of stripe rust were observed in three commercial winter wheat fields in Umatilla County in northeastern Oregon on May 22.

Washington, Idaho – Stripe rust was found on a solitary lower leaf of a susceptible check in a nursery at Walla Walla in southeastern Washington on April 23. On revisiting a field in Grant County in east central Washington, which was heavily infected with stripe rust in November 2013, no stripe rust could be found in late April. Generally, stripe rust disease pressure was low in eastern Washington in late April.

Very low levels of stripe rust were found in three commercial fields north of Walla Walla in southeastern Washington on May 22. No stripe rust was found in fields visited south of Walla Walla. Two stripe rust lesions were found in a commercial wheat field in Columbia County in southeastern Washington. No rust was found in commercial fields visited in Whitman, Benton and Franklin Counties in southeastern Washington. Winter wheat ranged from Feekes 7 to 10.5, while spring wheat ranged from Feekes 2-6. Generally, stripe rust disease pressure was low in eastern Washington in late May.

As is typical, stripe rust severities up to 30% were observed on susceptible cultivars in nurseries at Mount Vernon in northwestern Washington the first week of April.

Stripe rust was found in a field of the soft white winter wheat cultivar Brundage in the Hazleton area of south central Idaho in late May. The stripe rust was mostly confined to flag leaves and the wheat was just beginning to head. Stripe rust was readily found on Brundage in 2013, growers continue to plant the cultivar due to the high yield potential. One pustule of stripe rust was found in a nursery near Moscow in northwestern Idaho on May 21.

In areas of eastern and southern Idaho stripe rust was found, but only the soft white winter wheat cultivars Brundage and WB 470 in late June and early July. Stripe rust was not found on the most susceptible spring wheat lines in the nursery at Idaho Falls nor in the spring wheat nurseries at Rupert and Aberdeen in southeastern Idaho in late June. By early July, stripe rust was found on the cultivar WB936 west of Idaho Falls. Warming temperatures were expected to limit stripe rust development.

In an early July survey of fields in the Palouse region of Washington and Idaho (Whitman and Spokane Counties in eastern Washington and Latah County in northwestern Idaho) stripe rust was only found in one winter wheat field in Whitman County and one winter wheat field in Spokane County. One or two small hot spots (<1 foot diameter) with mixed resistant and susceptible reactions were found in the fields. Stripe rust was found in about 60% of the spring wheat fields in Whitman County and about 40% in Latah and Spokane Counties. When found in the spring wheat fields the incidence was less than 1%. Due to generally low disease pressure and adult plant resistance stripe rust development was very limited.

Montana – Wheat stripe rust was found on the cultivar Yellowstone in the Hardin area south central Montana in late May. It was presumed that Yellowstone was resistant to the predominant stripe rust races east of the Rockies, samples were sent to Xianming Chen for race typing.

Alberta, Canada – Low to moderate levels of wheat stripe were found in commercial winter wheat fields and plots in the Beaverlodge area in west central Alberta in early July.

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

Oat stem rust. Oat stem rust (negligible prevalence, 5-10% severity) was found in an edge of a field in Bastrop County in central Texas and in a nursery in Baton Rogue in southeastern Louisiana in early May. Oat was at milk stage in both locations. In Louisiana, oat stem rust generally came in late and caused little damage.

Oat stem rust was found in plots in DeKalb County in north central Illinois on July 10. A focus of oat stem rust was found in oat plots at St. Paul in southeastern Minnesota on July 16. Oat stem rust at incidences and severities from trace to 100% were observed in plots at Morris in west central Minnesota in late July. There were many reports of extremely low test weights and straw breakage in the area, perhaps a result of oat stem rust and oat crown rust. The third week of July, oat stem rust was found in a nursery in north central Colorado. Low levels of oat stem rust were found on unknown cultivars in plots at Stephen in northwestern Minnesota on August 13. The oats were at soft dough growth stage.

To date, race TJS has been identified from collections made in nurseries in South Texas and race TGN has been identified from a collection made in a nursery in East Baton Rouge in southeastern Louisiana.

Oat crown rust. Crown rust was severe across southern Minnesota to southeastern South Dakota. The abundant rain this spring and early summer in these areas created favorable conditions for buckthorn infection, release of aeciospores and oat infection. Oat crown rust was also widespread in Michigan.

South Texas – Oat crown rust was building and spread uniformly throughout the nursery at Wharton in late March. Crown rust was also increasing on Nora at Beeville, but had not yet been found at College Station. In early May, oat crown rust (5% prevalence, 5-10% severity) was found in the same Bastrop County field as the oat stem rust.

Florida – Oat crown rust was found on the cultivar Horizon 201 in Trenton and Hague in north central Florida in late April.

New York – Trace levels of oat crown rust were found on spring oat in a plot at Ithaca in south central New York on June 17.

Virginia – Crown rust was observed on volunteer oat in plots at Blacksburg in western Virginia the first week of July.

South Dakota, North Dakota, Minnesota, Wisconsin – Crown rust was severe on oat in a nursery at Brookings in eastern South Dakota on June 30. Common buckthorn, the alternate host for oat crown rust, in the vicinity had been shedding aeciospores and likely caused the severe infections. Oat crown rust at low incidence (<1%) and severity (<1%) was found on oat in Meeker and Stearns County in central Minnesota the fourth week of June. Crown rust was heavy in oat fields and plots from southern Minnesota to southeastern South Dakota on July 10. The abundant rain this spring and early summer in these areas created favorable conditions for buckthorn infection, release of aeciospores and oat infection. Trace levels of crown rust were found in plots at Stephen in northwestern Minnesota in early August.

In commercial fields in west central Wisconsin oat crown rust was found at high incidence and trace severity on July 2. Low levels of crown rust were found on the lower leaves of spring oats at Chilton and Arlington in eastern and south central Wisconsin, respectively the second week of July.

Oat crown rust was present on wild oat in wheat fields in eastern and central North Dakota, and was present in varying levels in plots throughout the area in early August.

Illinois – Oat crown rust was found at moderate to high incidence and severity in plots in DeKalb County in north central Illinois on July 10.

Michigan – Crown rust had spread across the state by mid-July with severities greater than in recent years.

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

Barley stem rust. Barley stem rust was found on barley in plots at Lincoln in southeastern Nebraska in early July. Due to severe winter injury the barley development was delayed. As is often the case there, stem rust can develop on late maturing barley. This was the first report and only report of barley stem rust in 2014.

Barley leaf rust. Low levels of barley leaf rust were found on the lower leaves of the winter barley Alba in plots at Mount Vernon in northwestern Washington on March 25. The rust apparently overwintered on fall planted barley. Moderate amounts of barley leaf rust were observed in susceptible border rows in nurseries at Blacksburg and Warsaw in western and eastern Virginia, respectively, in early May. Barley leaf rust at high incidence and low to high severity was found in plots at Corvallis in western Oregon on June 25. Barley was at Feekes 11.2 stage.

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

Barley stripe rust. Stripe rust was reported in a spring feed barley field in south central Idaho in early July. The barley was in milk to soft dough stage.

Rust on barberry. Light amounts of early aecial infection were observed on common barberry (*Berberis vulgaris*) in southeastern Minnesota on May 21. Moderate amounts of early aecial infection were found on common barberry in Dane County in south central Wisconsin in early June.

Rust on buckthorn. Crown rust aecia were first observed on buckthorn in Ithaca, New York on May 16 and were prevalent on buckthorn in central New York the fourth week of May. Common buckthorn **(***Rhamnus cathartica*) is the alternate host for oat crown rust. Crown rust infections were particularly severe on common buckthorn at the University of Minnesota Southwest Research and Outreach Center at Lamberton in southwestern Minnesota in early June. The infections had nearly defoliated some branches.

Thank you!

This is the final Cereal Rust Bulletin for 2014. We would particularly like to thank the following people for their timely observations, comments and collections. Without our cooperators' assistance the bulletins and race surveys would simply not be possible.

Cooperator	State	Cooperator	State	Cooperator	State
Kira Bowen	AL	Maria Newcomb	MN	Patrick Hayes	OR
Barton Fogleman	AR	Bruce Potter	MN	Chris Mundt	OR
Jason Kelley	AR	Matt Rouse	MN	Jay Chapin	SC
Esten Mason	AR	Madeleine Smith	MN	Emmanuel Byamukama	SD
Gene Milus	AR	Brian Steffenson	MN	Bob Fanning	SD
Gordon Cisar	CO	Sam Stoxen	MN	Marie Langham	SD
Scott Haley	CO	Lucy Wanschura	MN	Brad Powell	SD
Ned Tisserat	CO	Jochum Wiersma	MN	Connie Tande	SD
Ron Barnett	FL	Kun Xiao	MN	Heather Young Kelly	TN

Dan Bland	GA	Laura Sweets	MO	Mel Newman	TN
Alfredo Martinez	GA	Tom Allen	MS	Marla Barnett	TX
Jerry Johnson	GA	Mary Burrows	MT	Ron French	TX
Juliet Marshall	ID	Christina Cowger	NC	Amir Ibrahim	TX
Carl Bradley	IL	Paul Murphy	NC	Jackie Rudd	TX
Fred Kolb	IL	Stine Petersen	NC	Bryan Simoneaux	TX
Kiersten Wise	IN	Jennifer Vonderwell	NC	Russell Sutton	TX
Jon Appel	KS	Maricelis Acevedo	ND	Wynse Brooks	VA
Bill Bockus	KS	Venkat Chapara	ND	Neal Carpenter	VA
Bob Bowden	KS	Andrew Friskop	ND	Carl Griffey	VA
Erick De Wolf	KS	Stephen Baenziger	NE	Brook Brouwer	WA
Don Hershman	KY	Jennifer Rees	NE	Xianming Chen	WA
Stephen Harrison	LA	Stephen Wegulo	NE	John Moffat	WA
Clayton Hollier	LA	Gary Bergstrom	NY	Tim Murray	WA
Boyd Padgett	LA	Julia Crane	NY	Mike Pumphrey	WA
Trey Price	LA	Jeff Miller	NY	Anmin Wan	WA
Martin Nagelkirk	MI	Brett Carver	OK	Adrian Barta	WI
Eric Olson	MI	Jeff Edwards	OK	Shawn Conley	WI
Jim Anderson	MN	John Fellers	OK	David Long	WI
Jordan Briggs	MN	Nathalia Grachet	OK	Alan Roelfs	WI
Marty Carson	MN	Mark Gregory	OK	Damon Smith	WI
Roger Caspers	MN	Bob Hunger	OK		
Ruth Dill-Macky	MN	Art Klatt	OK		
Amy Fox	MN	Rick Kochenower	OK	Kelly Turkington	Alberta, Can
Sam Gale	MN	Brian Olson	OK	Peter Johnson	Ontario, Can
Yue Jin	MN	Gary Strickland	OK	Ellen Sparry	Ontario, Can
Joshua Kielsmeier-Cook	MN	Rocky Thacker	OK	Albert Tenuta	Ontario, Can
Jim Kolmer	MN	Mike Flowers	OR		

Our sincere apologies if by oversight we did not include someone in the list.