



# CEREAL RUST BULLETIN

Issued by:

**Cereal Disease Laboratory**

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For the latest cereal rust news from the field, subscribe to the cereal-rust-survey listserv. To subscribe, please visit:

<http://www.ars.usda.gov/Main/docs.htm?docid=9970>

Or, send an email to: [Sam.Gale@ars.usda.gov](mailto:Sam.Gale@ars.usda.gov)

Reports from this list as well as all Cereal Rust Bulletins are maintained on the CDL website (<http://www.ars.usda.gov/mwa/cdl>)

- New observations of wheat stem rust were not reported since the previous bulletin, which described isolated infections in sentinel plots planted in the lower Rio Grande Valley.
- Wheat leaf rust is at low incidence and low severity in very few locations (Texas, Oklahoma, Louisiana).
- Wheat stripe rust is the most widespread rust disease across the country with observations from 15 states, though severity is much lower than in previous years at this time.
- Oat crown rust and oat stem rust have not been observed in the current reporting period.
- *2017 Wheat leaf rust race survey results are now available.*
- *Request for cereal rust observations and samples in 2018.*

For original, detailed reports from our cooperators and CDL staff, please visit the [Cereal Rust Situation](#) (CRS) reports page on the [CDL website](#).

**Weather conditions.** As reported in the USDA Weekly Weather and Crop Bulletin released on May 15, much of the country experienced dry conditions in early to mid-May. The dry weather was accompanied by above average temperatures across most of the country, with extreme deviations in average temperatures, 8-16 degrees F above normal, in the southern Plains and across the Southwest. The southern Plains and the Southwest continue to experience drought conditions with much of the area under extreme to exceptional drought. Some of the hottest and severe drought areas include the Texas and Oklahoma panhandles and southern Kansas. These conditions have strained maturing winter wheat and recently planted, emerging crops. Though pockets of heavy rain slowed planting in the upper Midwest, the generally dry, warm weather was conducive for planting and fieldwork to progress well across most of the country.

**Crop conditions.** According to the Crop Progress report by the USDA National Agricultural Statistics Service released on May 14, 45% of the winter wheat crop has headed nationwide, compared to 61% last year and an average of 53% over the past five years. At this time 36% of the crop is reported in good to excellent condition, compared to 51% of the crop last year at this time. Colder than average temperatures and wet conditions early in the season delayed planting of spring wheat and other small grains in the Northern Great Plains, Midwest, and Pacific Northwest. Planting accelerated over the past few weeks, but still lags behind the previous year and previous five-year averages. At this time, 58% of the spring wheat crop has been planted nationwide and 14% of the crop has emerged, which lags behind the typical averages of 67% and 36%, respectively. Only 62% of the barley crop has been planted and 21% has emerged, which is 12% behind the five-year planting average and 24% behind the typical emergence schedule. Similarly, 72% of the oat crop has been planted nationwide and 48% has emerged, which also lags behind the five-year averages of 84% planted and 66% emergence.

**Wheat stem rust.** New observations of wheat stem rust have not been reported since the previous bulletin. Previously, wheat stem rust was first observed in sentinel plots planted with susceptible wheat in watermelon field windbreaks in the lower Rio Grande Valley of Texas on January 26. Follow-up observations were made at this location on February 28 and March 23. Affected susceptible cultivars include ‘Morocco’ and ‘LMPG6.’ Wheat stem rust observations have not been reported elsewhere this season.

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

**Wheat leaf rust.** Compared to recent years, wheat leaf rust pressure has been low this season. Observations have been received from the Plains Area (Texas and Oklahoma) and from the Southeast Area (Louisiana).

### Plains Area

*Texas* – On April 30, strong wheat leaf rust pressure was observed across central Texas (Thrall, McGregor, and Temple areas). Wheat has headed in these areas and was reported at the milk to soft dough stages. In contrast, wheat leaf rust was at trace amounts in fields just north of Waco. Previously, the first observation of wheat leaf rust was reported on February 9. However, only trace amounts of rust were observed on susceptible border rows of ‘Patton’ in experimental plots in Uvalde, TX. At the time, no leaf rust or other cereal rusts were observed during scouting across numerous variety trial locations (Castroville, College Station, Thrall, Hillsboro, McGregor, and Muenster). By mid to late March, leaf rust was observed in a grower’s fields near Waco and experimental fields in Castroville, though more recent reports indicate that disease pressure remained relatively low in these areas.

*Oklahoma* – On May 5, reports indicated that wheat leaf rust pressure remains low across the state. No observations of leaf rust were made during field day scouting in southwestern Oklahoma (Apache and Altus) and northeastern Oklahoma (Afton). However, active leaf rust was observed in variety trials in southwestern Oklahoma (Walters) on April 24. Across the state, wheat was flowering and had good overall quality, though growth appeared to be stunted in the southwestern fields. Previously, the first specific observation of leaf rust was reported from Stillwater on February 21, though only a few pustules were found in experimental fields. Reports from around the state at that time indicated low leaf rust disease pressure. No leaf rust was observed during additional scouting across southern and central Oklahoma (updates received on March 12, March 29, April 6, and April 13).

### Southeast Area

*Louisiana* – New observations have not been received from Louisiana since the last bulletin report. Previously, reports indicated that leaf rust was observed on March 12 in Baton Rouge experimental plots. At the time it was at low incidence and severity, though it continued to develop in this area though early April. Further north in Winnsboro, leaf rust was first observed in experimental plots on April 3. At that time, the wheat was heading and leaf rust was at low incidence and severity.

**Wheat leaf rust collection 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](#)

**2017 wheat leaf rust survey summary and results are now available.**

Please visit: [Wheat leaf rust race survey results](#).

**Wheat stripe rust.** Wheat stripe rust pressure has been relatively low, but widespread throughout the country. So far this year, wheat stripe rust has been reported in 15 states (Arkansas, Texas, Oregon, Washington, Mississippi, Georgia, Tennessee, Oklahoma, Louisiana, California, Kentucky, Kansas, Illinois, North Carolina, and Virginia).

**Pacific Northwest Area.** Compared to previous years, stripe rust disease pressure continues to be low in the region and little evidence of overwintering was observed. However, current weather conditions are conducive to stripe rust infection, so further development of the disease is possible.

*Oregon* – No new observations have been received from Oregon since the last report. Previous reports indicated that the first observation of wheat stripe rust in Oregon was on February 21 in Corvallis. This was isolated to a single plot in an experimental nursery. On March 3, a follow-up visit at this location did not find evidence of spreading to any adjacent plots in this field or in nearby nurseries. Also on March 3, known susceptible ‘Foote’ soft white winter wheat plots were surveyed, but no evidence of stripe rust was found. Early April scouting in northeastern Oregon found wheat stripe rust only in an isolated hotspot in experimental plots in Umatilla County, Oregon. On April 3, two isolated foci of severe stripe rust were observed in ‘Roselyn’ wheat in northwestern Oregon (North Plains). On April 21, further development of stripe rust was observed in Umatilla County on a known susceptible variety ‘Mary.’

*Washington* – On May 8, wheat stripe rust was observed at low levels in a few fields in the Palouse Region during a survey of several counties in eastern Washington (Adams, Douglas, Grant, Lincoln, Whitman). However, no rust was found in most of the surveyed fields. Wheat in the region is at jointing to boot stages. Previously, reports indicated that the first observation of stripe rust was in early March on susceptible wheat in experimental fields in Walla Walla. However, in contrast to previous years, stripe rust was absent from commercial fields in the area. Early April scouting in southeastern Washington and northeastern Oregon found isolated hotspots of wheat stripe rust in experimental plots (Garfield and Walla Walla counties). Commercial fields in several counties across the region were scouted on April 10. Stripe rust was found at low incidence in fields in Franklin and Benton Counties. No stripe rust was found in fields in Whitman, Garfield, Columbia, Walla Walla, and Adams counties.

**Southeast Area.** There have not been new reports of wheat stripe rust in this region during the current reporting period. In contrast to recent years, wheat stripe rust developed late in the southeastern states. The first observations were reported in late March, which is a month behind observations from last year.

*Arkansas* – On March 20, an isolated incidence of wheat stripe rust was observed in central Arkansas experimental plots.

*Louisiana* – On April 3, wheat stripe rust was observed in a single experimental plot in Winnsboro.

*Mississippi* – On March 21, several foci of stripe rust were observed in winter wheat experimental plots in Stoneville. The high severity only in isolated foci suggest that the rust overwintered in these plots.

*North Carolina* – On April 18, wheat stripe rust was observed in two fields in the central coastal area (Greene County) on a known susceptible variety, ‘Shirley.’

**Northeast Area.** There have not been any observations of wheat stripe rust from this region.

**Plains Area.** Wheat stripe rust has persisted in the region over the past several weeks. So far, it has been observed in Texas, Oklahoma, Kansas and Tennessee.

*Texas* – On April 30, diseased plots in Uvalde were revisited. Though some active wheat stripe rust was still observed on susceptible border rows planted with ‘Patton,’ teliospores were also developing, which indicates the infection is nearing its end. Previously, wheat stripe rust was first observed in these Uvalde experimental plots on February 9. At that time, no stripe rust was observed during scouting of variety trials elsewhere across the region

(Castroville, College Station, Thrall, Hillsboro, McGregor, and Muenster). By March 9, wheat stripe rust was also observed in College Station experimental plots, but was restricted to 'Sisson' and 'WB 4303' varieties. Stripe rust has not been observed by growers in the area. A follow-up on April 30 to the aforementioned trials across the region found no to trace amounts of wheat stripe rust except for low levels on a few varieties in McGregor experimental plots.

*Oklahoma* – On May 5, a report indicated that no stripe rust was observed during field day scouting across southwestern (Apache and Altus) and northeastern Oklahoma (Afton). On April 24, active stripe rust was observed in variety trials in southwestern (Walters) and central (Chickasha) Oklahoma. Wheat stripe rust disease pressure was much higher in the central portion of the state and is expected to continue developing given the current conducive weather conditions. Previously, reports indicated a late arrival of wheat stem rust to the region with the first confirmed observation of wheat stripe rust in a Stillwater experimental plot on April 5. Very low incidence was observed in an isolated plot and further development has not been reported. At that time, no stripe rust was observed during organized scouting efforts across southern and mid-Oklahoma (Jackson, Dewey, Washita, Blaine, and Kingfisher Counties). On April 13, an isolated incidence of stripe rust infection was observed in south central Oklahoma near Ardmore. Active infection as well as telia were observed at this location.

*Kansas* – Reports from early to mid May (May 8 and 14) indicated that wheat stripe rust was present at low severity and low incidence in southeastern and central portions of the state, however, the disease has progressed to the upper leaves in some areas. Wheat is at heading and flowering stages in these regions. Previously, in mid April, foci of stripe rust were observed in a single field in southeast Kansas on the known susceptible variety, 'Everest.' No stripe rust was observed while surveying nearby fields.

*Tennessee* – No new observations have been received from Tennessee in the current reporting period. Previously, on April 6, stripe rust was observed in the western part of the state (Gibson, Madison, and Lake counties).

**Midwest Area.** Few observations have been made in the region this year.

*Kentucky* – No new observations have been reported since the previous bulletin. Previous reports indicated that wheat stripe rust was first observed on April 11 at very low incidence and severity in research plots in the western part of the state (Caldwell County). At the time of this observation, wheat in the area was nearing flag leaf emergence and the weather was not conducive for further rust development.

*Illinois* – No new observations have been reported since the previous bulletin. Previous reports indicated that wheat stripe rust was first observed on April 16 in southern Illinois (Gallatin County) in a field planted with a known susceptible variety '25R46.' At the time, neighboring fields were free of rust, however, the weather was conducive for further spread of the disease. Wheat in the area was delayed in maturity due to unusually cold weather, however, some crops were at or nearing flag leaf emergence.

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

**Please send wheat and barley stripe rust collections as soon as possible after collection to: Dr. Xianming Chen, USDA-ARS (Washington State University; see details in attached rust collection guide).**

**Oat stem rust.** No new observations have been received during the current reporting period. On February 28 and again on March 23, oat stem rust was observed in sentinel plots planted in watermelon windbreaks in the lower Rio Grande Valley in Texas. On March 23, earlier than typical for this region, a few pustules of oat stem rust were also observed in a Baton Rouge, Louisiana oat nursery, which continued to develop through early April. However, reports of oat stem rust have been absent from the surrounding areas.

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

**Oat crown rust.** No new observations of oat crown rust have been reported since the previous bulletin. Previously, reports indicated that oat crown rust was first observed on March 5 on susceptible spreader rows planted with 'Brooks' oats in an oat nursery in Baton Rouge, Louisiana. The weather was conducive for further rust development in this area and crown rust spread throughout the nursery in March.

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

**Barley leaf rust.** Barley leaf rust has not been reported this season.

**Barley stem rust.** Barley stem rust has not been reported this season.

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

**Rye leaf rust.** There have not been new reports of rye leaf rust in the current reporting period. Previously, on March 23, leaf rust was observed on rye in experimental plots in Baton Rouge, Louisiana.

### Identifying rust diseases of wheat and barley

A guide developed by the multi-state extension and research committees for small grain diseases, NCERA-184 & WERA-97, is available at: [http://www.ars.usda.gov/SP2UserFiles/ad\\_hoc/36400500Publications/Rust\\_Diseases\\_National.pdf](http://www.ars.usda.gov/SP2UserFiles/ad_hoc/36400500Publications/Rust_Diseases_National.pdf)

### Current cereal rust situation

For the latest cereal rust situation reports, please subscribe to the cereal rust survey listserv list\*.

Instructions can be found at:

<http://www.lsoft.com/scripts/wl.exe?SL1=CEREAL-RUST-SURVEY&H=LISTS.UMN.EDU>

Or, if you prefer, simply send a subscription request to Sam Gale ([Sam.Gale@ars.usda.gov](mailto:Sam.Gale@ars.usda.gov)).

All messages sent to the list are archived on the CDL website: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

\*The sole purpose of the Cereal Rust Survey listserv list is to provide a format for cereal researchers and extension personnel to share observations of cereal rusts and other cereal diseases. We make no warranty about any information shared on this listserv or its utility or applicability. Mention of any product, brand, or trademark does not imply endorsement or recommendation of that product, brand, or trademark by USDA-ARS, or any of the participants on this listserv. By enrolling on this listserv list, participants understand and agree to abide by these conditions.

**Request for cereal rust observations and samples**  
Cereal Disease Laboratory, USDA-ARS, St. Paul, MN  
*(Please save this for future reference)*

**Cooperators' assistance is critical to our work**

We depend on the assistance of our cooperators for cereal rust observations and samples (as well as other significant small grain disease observations). Without this assistance our job would be much more difficult. We sincerely thank all those who have assisted us in the past and hope the assistance continues this year and in future years.

**Observations**

If you have information on the cereal rust situation in your area that you would be willing to share with the group, please email your observations to:

[CEREAL-RUST-SURVEY@LISTS.UMN.EDU](mailto:CEREAL-RUST-SURVEY@LISTS.UMN.EDU)

Or, to: Katie Liberatore ([Katie.Liberatore@ars.usda.gov](mailto:Katie.Liberatore@ars.usda.gov))

*We would like to include your name and email address so others can contact you. **If, however, you prefer not having your name or email address appear with the information, please let us know when submitting your observations.***

***Information of most importance***

We welcome any information you can provide, but are particularly interested in:

- ∞ Location (state, county, city)
- ∞ Rust (leaf rust, stem rust, stripe rust, crown rust)
- ∞ Host (wheat, barley, oat, grasses, etc.)
- ∞ Cultivar or line name if known
- ∞ Grain class if known
- ∞ Severity and prevalence
- ∞ Growth stage: when the rust likely arrived, when infection was first noted and current growth stage
- ∞ Where rust is found on the plants, e.g., lower leaves, flag leaf, etc.

**Guidelines for making cereal rust uredinial collections\*\***

Reports on the distribution of races of cereal rust fungi are an important part of our annual cereal rust surveys. We routinely collect and test isolates of stem rust (wheat, oat, and barley), wheat leaf rust, oat crown rust and barley leaf rust. We are most interested in small grain collections (wheat, barley, oat and rye), but are also interested in stem rust, leaf rust, and stripe rust collections from grasses, e.g.:

Jointed goatgrass (*Aegilops cylindrica*) Ryegrasses

(*Elymus* spp.) Wheatgrasses (*Elytrigia* spp.)

Wild barleys (*Hordeum* spp.) Wild oat (*Avena fatua*)

Common grasses, e.g., *Agropyron*, *Agrostis*, *Festuca*, *Leymus*, *Lolium*, *Phleum*, and *Psathyrostachys* spp.

*Images and descriptions of the above grass species can be found on the USDA Natural Resources Conservation Service's [PLANTS Database](#) website*

1. Rust pustules should be fresh and fully developed, except when this may not be possible, i.e., the first uredinial collections found early in the season.
2. When rusted small grain or grass plants are encountered, please cut 5 to 10 sections of plant stem (if possible, avoid including plant nodes as they do not readily air dry) or leaf, 4 inches long with large and small pustules and place in a regular paper mail envelope (**Please Do Not use plastic or waterproof envelopes**). Do not staple or tape the envelope, instead fold the flap shut.

3. Important information should be recorded for each collection, e.g., date, county, state, cultivar or line, crop stage, whether collection is from a nursery or commercial field, etc. Please use our data collection form ([standard pdf](#) or [fillable pdf](#)) if possible. If the grass genus or species is unknown to the collector, please send a head in a separate bag or envelope if possible, indicating which collection it is associated with to aid in identification.
4. Please avoid exposing samples to direct sunlight or unusual heat of any kind, e.g. car dashboard, outside mailboxes, etc. Samples should be kept at room temperature for 24 hours to allow the plant material to dry. Afterwards the samples should be placed in a cooler or refrigerator before they are mailed. Please do not keep samples in a freezer. The samples should be sent to us as soon as possible after the samples have dried.
5. Please promptly mail the envelope(s) with the appropriate collection form inside each envelope to:

Cereal Disease Laboratory, USDA-ARS 1551 Lindig Street  
University of Minnesota St. Paul,  
Minnesota 55108

**\*\* Stripe rust collections should be sent to:**

By FedEx or UPS:

Dr. Xianming Chen USDA-ARS  
361 Johnson Hall Washington State University Pullman, WA 99164-6430

By regular mail: Dr. Xianming Chen 361 Johnson Hall  
P.O. Box 646430 Washington State University Pullman, WA 99164-6430

*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.

If you have any questions regarding stripe rust samples, contact: Xianming Chen, Phone 509-335-8086; e-mail: [xianming@wsu.edu](mailto:xianming@wsu.edu) or [xianming.chen@ars.usda.gov](mailto:xianming.chen@ars.usda.gov)

**Thank you in advance for your assistance!**