



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 list. To subscribe, please visit:
<http://www.ars.usda.gov/Main/docs.htm?docid=9970>

Or, send an email to: 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/>)

- Wheat stem rust was absent in the Rio Grande Valley in early spring and was not reported until April 9 in Castroville, TX.
- Wheat leaf rust was first reported in Texas in mid February and was widespread throughout the southern Great Plains and Louisiana by early April.
- Wheat stripe rust is widespread in the Pacific Northwest and predicted to spread throughout the Plains and Eastern Areas resulting in significant yield loss.
- Wet and warm winter conditions in the Southeast resulted in premature development of oats and associated rust infections in Louisiana and Texas.
- *2016 Wheat leaf rust race survey results are now available.*
- *Request for cereal rust observations and samples in 2017.*

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.

Weather conditions. As reported in the USDA Weekly Weather and Crop Bulletin, significant rainfall was observed throughout most of the country in early to mid April, however, abnormally dry conditions have persisted in the central Plains and parts of the Southeast. Moderate to severe drought conditions were reported throughout Oklahoma, southwestern Kansas, southeastern and central Colorado, and into Nebraska. Long-term drought has persisted in western South Dakota and northwestern Wyoming. Moderate to severe drought has impacted Georgia and the Carolinas with pockets of drought conditions extending into the Northeast. In early April, average temperatures were higher than normal for most of the nation. In the first week of April, the largest deviation (>8 degrees above normal) was observed throughout Minnesota, North Dakota, South Dakota, and western Montana. This past week, the warm front moved eastward with most of the central Plains, Midwest, and Northeastern regions experiencing >8-12 degrees above normal. This is in contrast to lower than average temperatures in northern California and the Pacific Northwest.

Crop conditions. According to the USDA National Agricultural Statistics Service, on April 16, 54% percent of the winter wheat crop was reported in good to excellent condition nationwide compared to 57% last year at this time. Nineteen percent of the winter wheat has headed, six percentage points ahead of the previous five-year average. By April 16, 5% of the spring wheat crop was planted, six percentage points behind the 5-year average. Thirteen percent of the barley crop was planted, falling 15% behind the 5-year average. Forty-five percent of the oat crop was sowed and 29% had emerged by April 16, compared to an average of 52% and 35%, respectively, over the past five years.

Wheat stem rust. Unlike in recent years, cereal gains used in windbreaks of watermelon fields in the lower Rio Grande Valley were stem rust free this spring, likely a result of extensive drought in the region. On April 9 wheat stem rust was first observed in a single plot in Castroville, TX, with a disease incidence of 20% and disease severity up to 80% in rusted plants. The high disease severity within the plot and a lack of stem rust in the surrounding plots suggested that this is likely an overwintering focus. Stem rust was also reported on April 17 at a research station in southern Louisiana (Crowley).

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



Wheat leaf rust. Wheat leaf rust has been found throughout the southern Great Plains and the Southeast starting in Texas and Louisiana in February and moving northward into Oklahoma and Kansas by the beginning of April.

Plains Area

Texas – Leaf rust was present in research plots and in some farm fields throughout southeast Texas in mid February. In the third week of March leaf rust was at moderate to high severity at mid canopy in plots at Castroville in south central TX. In early April leaf rust was at high severity on susceptible cultivars such as TAM 112 with Lr39 at Castroville. Wheat plots at Castroville had more leaf rust in early April compared to previous years.

Oklahoma – In Oklahoma, leaf rust at low incidence and severity in plots and fields near Oklahoma City, Stillwater, and Enid, in late March. In early April leaf rust was present in plots at Stillwater and Perkins. With the recent rainfall, leaf rust will likely be increasing in Oklahoma in April.

Kansas – Leaf rust was reported to be at low levels in fields in south central Kansas in the first week of April. Susceptible cultivars may be vulnerable to leaf rust if conditions for rust infection and spread continue.

Southeast Area

Louisiana – By the end of February leaf rust was widespread in plots in Winnsboro, LA. In early April leaf rust was present in plots in southern Louisiana. By the second week in April, leaf rust had increased to high levels in southern Louisiana plots.

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](#)

2016 wheat leaf rust survey summary and results are now available.

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

Wheat stripe rust. Wheat stripe rust was observed into late November 2016 throughout the Plains and Pacific Northwest Areas and Canada, including reports in Colorado, Nebraska, Oklahoma, Oregon, Washington, and Lethbridge, Canada. The Pacific Northwest experienced a cold, yet wet winter, with snow cover increasing probability of rust survival. Early observations of stripe rust in the region, coupled with weather predictions for April suggest continued spreading of the disease. A composite of several models predicts severe yield loss due to stripe rust in susceptible varieties in this area. Meanwhile, dry conditions in Texas resulted in lower disease pressure early in the season. However, historical data suggests that early incidence of stripe rust in Texas and Louisiana, as observed this spring, increases the probability of widespread and severe disease epidemic developing throughout the Plains area and in the Eastern regions.

Pacific Northwest Area

Washington and Oregon – Snow cover in the region provided the potential for overwintering of rust spores. In early March, evidence of late fall 2016 stripe rust infection was observed on winter wheat in Lincoln and Adams counties. Active stripe rust was observed on freshly greening winter wheat in Walla Walla research plots and nearby commercial fields. Shortly following the reports in southeast Washington, stripe rust was observed by mid March in Lexington County in eastern Oregon. By April, stripe rust was widespread in eastern Washington and Oregon. Stripe rust was found in 80% of 70 fields checked with the most activity in Walla Walla, WA and Pendleton, OR, where areas of 100% incidence and over 40% severity were observed. Additional observations were made in eastern Oregon at variety testing locations (Wasco and Sherman Counties) as well as in a commercial field in Sherman.



Southeast Area

Louisiana – A warm and wet winter resulted in premature development of oat and wheat in Louisiana and early progression of rust diseases. Stripe rust was reported in Winnsboro, LA research plots in early February. Warm and wet conditions favored continued development and stripe rust was widespread in Winnsboro by late February. Typically stripe rust is most active in March in this region.

North Carolina – On February 28th wheat stripe rust was observed on a known susceptible variety 'Southern States 8404' in a single field in southern North Carolina.

Northeast Area

Delaware, Maryland, and Virginia– On April 11 stripe rust was confirmed in southern Delaware following earlier sightings near the Eastern shore of Virginia. Due to incidence in these regions, stripe rust was suspected in southern Maryland and was confirmed by mid April in Preston near the Delaware boarder.

Plains Area

Texas – In February, stripe rust was reported at low incidence throughout Central and South Texas, mainly in research fields on highly susceptible border plots. By late February, stripe rust was observed in Uvalde, TX, but infection slowed throughout March as temperatures increased.

Oklahoma – Stripe rust was observed experimental plots near Ardmore, OK in late March. By early April, telia was found in southwest Oklahoma and active stripe rust was found on wheat in the central region near Hennessey, OK. Weather conditions in early April favored further spreading of the disease.

Kansas – In Kansas, stripe rust was first observed on the susceptible cultivar, 'Everest', on April 4th in Montgomery County in the southeast portion of the state that borders Oklahoma. Days later, stripe rust was observed in seven counties near the OK border and into central Kansas. Cool and wet weather in early April favored continued spreading of the disease.

Tennessee – In the first week of April, low to moderate stripe rust was observed on soft red winter wheat in Haywood County and reports have spread throughout several counties in western Tennessee since then.

Colorado – Though stripe rust was reported in late fall 2016, it does not appear to have overwintered and activity is yet to be observed in the state this spring.

Nebraska – On April 18, stripe rust was found in the northern part of the Nebraska panhandle (Sheridan County) that is believed to have overwintered from widespread infection last fall.

Midwest Area

Wisconsin –Active stripe rust in southern Wisconsin in March indicates an unprecedented overwintering of stripe rust in the region.

Kentucky – On April 14, stripe rust was observed in a western Kentucky field where most wheat is at or near heading.

Canada

Stripe rust was reported on April 13th at the Lethbridge research station in Alberta, Canada on winter wheat. This early observation indicates probable overwintering of the rust from last fall.

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. Similar to 2016, oat stem rust was observed unusually early and further north than typical. So far, reports remain concentrated in Louisiana and southern Texas (Uvalde and Castroville). Though oat stem rust is seldom observed in Louisiana before April, it was first seen on February 28th in Winnsboro, LA. By April, it was reported to have increased in severity in Baton Rouge, LA.

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

Oat crown rust. Oat crown rust was reported early in the Southeast and southern Plains Areas.

Southeast Area

Louisiana – A warm winter resulted in early development of oats, reportedly 3 weeks ahead of schedule, and associated rust infections throughout Louisiana. Oat crown rust was reported in mid February in Baton Rouge and in Winnsboro by late February. Typically crown rust does not develop in this area until later in the season, but has the potential to cause more damage than usual this year since it had additional time to develop and spread.

Plains Area

Texas – In early march, variable, yet widespread crown rust infection was reported in Corpus Christi, TX. Widespread and severe infection was also reported in Uvadale, TX in late March on oats at or near heading.

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

Barley leaf rust. Barley leaf rust was observed throughout southern Maryland and Delaware in mid April.

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>.

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

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).

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 *

Or, to: Katie Liberatore (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](http://plants.usda.gov) 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 or xianming.chen@ars.usda.gov

Thank you in advance for your assistance!

