



CEREAL RUST BULLETIN

Issued by:

Cereal Disease Laboratory

U.S. Department of Agriculture
Agricultural Research Service
1551 Lindig St, University of Minnesota
St. Paul, MN 55108-6052
(612) 625-6299
FAX (651) 649-5054
oluseyi.fajolu@usda.gov

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: oluseyi.fajolu@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 has been reported in 12 states.
- Wheat leaf rust is generally moderate in most states where it is reported.
- Wheat stripe rust is widespread across the country.
- Oat stem and crown rust were found in Kentucky, Illinois, and Minnesota.
- Barley leaf rust was reported in Minnesota and New York.
- Severe barley stripe rust was observed in Washington.
- Rye leaf rust was reported in Indiana, Ohio, and Minnesota.
- *2023 wheat leaf rust race survey results are available.*
- *Request for cereal rust observations and samples in 2024.*

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. According to the “USDA Weekly Weather and Crop Bulletin” and the “U.S. Agricultural Weather Highlights” released on July 9, record-setting heat persisted in the West. It led to increased irrigation demands and wildfire threats. Ukiah, CA recorded highs of 110° F or greater each day from July 2-7, breaking monthly and annual records for 110-degree days. Multiple active wildfires in California burned thousands of acres of vegetation. Most of the South was hot with highs in the triple-digit. In contrast, the upper Midwest and the northern Plains experienced heavy rain that caused local flooding and still waterlogged in some areas. The temperature was about 5° F below average.

Crop conditions. According to the July 9 report, 63% of the nation’s winter wheat acreage had been harvested, compared to 43% last year and 52% over the past five years. As of July 7, 59% of the nation’s spring wheat crop had headed, compared to 66% last year and 60% over the past five years. Seventy-five percent of the 2024 spring wheat was rated in good to excellent condition compared to 47% the previous year. By July 7, 83% of the nation’s oat acreage had headed, one percentage point below last year but one point above average. Sixty-seven percent of the nation’s oat crop was rated in good to excellent condition, 20% points above last year. Fifty-six percent of the nation’s barley crop had reached the headed stage, the same value as last year but three percentage points below average. As of July 7, 70% of the 2024 barley acreage was rated in good to excellent condition, 18 points above the previous year.

Wheat stem rust. Wheat stem rust was found in most fields scouted during the annual survey conducted by USDA-ARS Cereal Disease Laboratory staff along the Ohio Valley on June 17 through 21, and at the University of Minnesota Southern Research Centers on July 10. The disease incidence and severity were higher at these locations than in past recent years.



Previously, wheat stem rust was reported in Texas, Louisiana, Florida, Oklahoma, Kansas, Missouri, and Georgia (see Cereal Rust Bulletin # 3).

Illinois – Low to moderate stem rust was observed in wheat trials at the University of Illinois Champaign research fields. Wheat was at the late milk growth stage.

Indiana – Stem rust ranging from trace to 40% severity was found in wheat research plots at the Purdue University Agricultural Center for Research and Education site near West Lafayette. Moderate stem rust severity was observed along the edges of a grower's field scouted in Carroll County. The wheat crop ranged from soft to hard dough.

Ohio – Wheat stem rust at trace to 50% severity was seen in wheat trial plots at the Ohio State University Agricultural Research and Development Centers near Hoytville in northwestern Ohio and at Wooster in northcentral Ohio. A similar level of disease was observed along the edges of a grower's field in Huron County, but a high incidence of stem rust was present in a grower's field in Henry County. The wheat crop was at the mid-soft dough growth stage.

Michigan – In late June, stem rust at ~5% severity and 50% incidence was observed in a commercial field in East Lansing, Ingham County. The crop was at the mealy ripe growth stage.

Minnesota – On July 10, wheat stem rust was rated 40S on susceptible Morocco in the variety trial at Oklee, Red Lake County. High levels of stem rust were observed on susceptible varieties in the wheat trials at the University of Minnesota Southern Research Centers in Waseca and Redwood Counties.

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

Wheat leaf rust. Leaf rust was present in all fields scouted during the cereal rust survey along the Ohio Valley on June 17 through 21 and at the University of Minnesota Research Stations in June and July. The disease ranged from low to high incidence and severity. Wheat leaf rust disease levels were higher than in the last three years.

Illinois – Up to 40% severity of natural leaf rust was found on susceptible wheat in trials at the University of Illinois Champaign research fields.

Indiana – Low to moderate levels of wheat leaf rust were present at the Purdue University Agricultural Center for Research and Education site near West Lafayette. A similar level of rust was observed in a grower's field surveyed in Carroll County.

Ohio – A wide range of leaf rust severity was observed in the research plots at the Ohio State University Agricultural Research and Development Centers near Hoytville and at Wooster. Disease severity ranged from 5S on some varieties to 70S on susceptible ones. Wheat leaf rust was collected from the six commercial fields visited in Allen, Henry, and Seneca counties. The disease was present across one of the fields, while leaf rust was only found on the unsprayed edges of the other five fields.

Michigan – Moderate severity and a high incidence of leaf rust were reported in a commercial field in East Lansing, Ingham County. The crop stage was at the mealy ripe growth stage. A sample was received at the Cereal Disease Laboratory for race identification.

Minnesota – During a cereal rust survey at the University of Minnesota Rosemount Research Center on June 26, low to moderate leaf rust was observed in winter wheat variety plots. The crop was at the soft dough growth stage. Spring wheat was free of rust pustules. At the Saint Paul winter wheat research plots, leaf rust was present at low to moderate severity only on the border plants. Leaf rust was greater than 50S on susceptible cultivars in wheat trial plots at the

UMN Southern Research Centers in Waseca and Redwood Counties. On the contrary, leaf rust was rated 10S on susceptible Morocco in the variety trial at Oklee, Red Lake County. Previously, low levels of leaf rust were reported in Ramsey and Polk counties (see [Cereal Rust Bulletin # 3](#)).

South Dakota – Wheat leaf rust was reported in a commercial field in Brookings County.

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](#)

2023 wheat leaf rust survey summary and results are available.

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

Wheat stripe rust. Since our previous report of stripe rust in 30 states, disease updates were received from Washington and Minnesota.

Minnesota – Low levels of stripe rust were observed in wheat trials at Benson, Swift County, and Crookston, Polk County, in late June. However, high disease severity was reported in winter and spring wheat variety trials at the University of Minnesota Sand Plain Research Farm. On July 10, up to 70% severity of natural stripe rust was seen on susceptible varieties in the wheat trials at the UMN Southern Research Centers. Some of these varieties were also infected with leaf rust, stem rust, or both. Stripe rust was rated 60S on susceptible Morocco in the variety trial at Oklee. Previously, low levels of stripe rust were detected in the winter wheat nursery fields in Saint Paul, Ramsey County (see [Cereal Rust Bulletin # 3](#)).

Washington – Stripe rust reached 100% severity on susceptible winter wheat varieties in nurseries at all locations. The disease was up to 80% severity on spring wheat nurseries in Adams, Walla Walla, and Ferry counties, and up to 100% on susceptible spring wheat varieties in Skagit and Whitman counties. The winter wheat crop is maturing and spring wheat has passed the flowering stage.

Stripe rust observation 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. Races TGN, KBD, and TQL were identified from the oat stem rust samples tested to date. Oat stem rust was previously reported in Texas, Louisiana, Florida, and California (see [Cereal Rust Bulletin # 2](#)).

Kentucky – Oat stem rust was reported in Lexington, Fayette County.

Illinois – Trace to 25% severity and 10% incidence of stem rust were observed in oat trials at the University of Illinois Champaign research fields.

Minnesota – Oat stem rust at moderate severity was observed in oat plots at the UMN Rosemount Research Center, but the rust was severe in oat trials at the UMN Southern Research Centers.

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

Oat crown rust.

Kentucky – In mid-June, oat crown rust was reported in Lexington, Fayette County.

Illinois – Trace to 20% severity and 10% incidence of crown rust were observed in oat trials at the University of Illinois Champaign research fields.

Minnesota – Severe oat crown rust was found in oat research plots at the University of Minnesota Sand Plain Research Farm, UMN Rosemount Research Center, and UMN Southern Research Centers.

South Dakota – Oat crown rust was observed on Rainer cultivar in Brookings County.

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

Barley leaf rust. Barley leaf rust was found in research plots at the UMN Rosemount Research Center and UMN Southern Research Center, Lamberton. Previously, trace levels of barley leaf rust were observed in research plots in Ithaca, NY (see [Cereal Rust Bulletin # 3](#)).

Barley stripe rust. Barley stripe rust had reached 80% severity in nurseries at Mount Vernon and Pullman locations in Washington.

Rye leaf rust. Our previous report indicated rye leaf rust in Kansas (see [Cereal Rust Bulletin # 3](#)).

Indiana – A moderate level of rye leaf rust was observed at the Purdue University Agricultural Research field and in a grower's field in Carroll County.

Ohio – Leaf rust was observed in a rye variety trial in the Ohio State University Agricultural Research field in Wooster, Wayne County.

Minnesota – Leaf rust was reported in winter rye variety trials at the UMN Sand Plain Research Farm, Becker, and the UMN Research station, Crookston.

Accessory host. Stem rust on *Hordeum jubatum* (Foxtail barley) was observed in the University of Illinois Champaign research field.

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). If you are able, please collect rust samples and send them to us. We sincerely thank all those who have assisted us in the past and hope the assistance continues this year and in the future.

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: Dr. Oluseyi Fajolu (oluseyi.fajolu@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 the following:

- 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, 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 2–3 days 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 this address:

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

**** Stripe rust collections should be sent by FedEx or UPS to:**

Dr. Xianming Chen USDA-ARS
Washington State University 410 SE Dairy RD, 114B - 101 Pullman, WA 99164

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 Dr. Xianming Chen, Phone 509-335-8086; e-mail: xianming@wsu.edu or xianming.chen@ars.usda.gov

Thank you in advance for your assistance!

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 Dr. Oluseyi Fajolu (oluseyi.fajolu@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.