



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: 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 leaf rust has been reported in fourteen states and generally at low levels.
- Wheat stripe rust is severe in the eastern Pacific Northwest.
- Oat stem rust samples from Florida and Louisiana were race-typed as TGN.
- Oat crown rust was reported from Alabama.
- There are no new observations of barley leaf and stripe rust since they were reported from Virginia, California, and Washington, respectively.
- *2021 wheat leaf rust race survey results are available*
- *Request for cereal rust observations and samples in 2022*

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 June 22, hot and dry weather prevailed in the central and southern Plains decreasing the topsoil moisture. Triple-digit temperature readings were common across the region and extended to the Dakotas. Dodge City, KS, had its highest-ever minimum temperature of 83° F on June 13, breaking a record set on July 12, 1978, with a low of 81° F. McCook, NE, recorded a high of 109° F on June 13. In contrast, significant showers occurred in the Northwest in mid-June. Inches of rain ranged from 0.26 – 2.18 in 24 hours. Daily record low temperatures include 24° F in Big Piney, WY, and 26° F in Klamath Falls, OR. Meanwhile, northern California experienced warm and dry weather. There were scattered thunderstorms in some parts of the Midwest, but the heat and dryness resulted in statewide soil moisture of 20 – 44% short.

Crop conditions. According to the June 22 report, 91% of winter wheat has headed nationwide, four percentage points behind last year and the five-year average. Twenty-five percent of the nation’s winter wheat acreage was harvested by June 19, ten percentage points above the previous year and three points above average. As of June 19, 30% of the 2022 winter wheat crop was rated in good to excellent condition compared to 49% at the same time last year. Eighty-nine percent of the nation’s spring wheat had emerged, nine percentage points behind the previous year and eight points below average. Fifty-nine percent of this year’s spring wheat was reported in good to excellent condition, 32 points above the same time last year. By June 19, 42% of the 2022 oat acreage had headed compared to 61% last year and 54% over the past five years. Sixty percent of the nation’s oat acreage was reported in good to excellent condition, 21 points ahead of last year. Eight percent of the barley acreage had headed, nine percentage points below the previous year and five points below average. Fifty-one percent of the nation’s barley was rated in good to excellent condition, twelve percentage points above the same time last year.



Wheat stem rust. Stem rust has not been reported on wheat in the U.S. this year.

Wheat leaf rust. Leaf rust has been reported in fourteen states: Texas, Oklahoma, Kansas, Louisiana, Alabama, Georgia, North Carolina, Virginia, Maryland, New York, Michigan, Ohio, Illinois, and California. The disease is generally low in most states due to dry and warm weather conditions.

Kansas – Low levels of leaf rust were found in multiple counties but at less than 10% severity on flag leaves. The disease appeared in early June, very late in the growing season when the wheat crop was rapidly moving through grain filling stages. According to Dr. Erick DeWolf, wheat rust diseases in Kansas were below average relative to the past ten years.

Michigan – Wheat leaf rust was observed in the first week of June in Ingham County. Disease pressure at the Michigan State University Mason Research Farm was rated 40% incidence and 50% severity. The wheat crop was at the watery ripe growth stage.

Ohio – Two collections of wheat leaf rust were received at the Cereal Disease Laboratory from Tiffin (Seneca County) and Wooster (Wayne County) on June 21. Disease severity and incidence were about 50% at Tiffin and 25-30% at Wooster. Wheat was at the mid dough growth stage.

Illinois – Wheat leaf rust in a field at Neoga, Cumberland County, was about 50% severity and 30% incidence in mid-June. In contrast, the disease was only at a trace level in Champaign. The Cereal Disease Laboratory has received samples from both locations. The wheat crop was at the late dough growth stage.

Maryland – Two collections of wheat leaf rust were received at the Cereal Disease Laboratory from Queenstown (Queen Anne's County) and Ellicott (Howard County). The disease severity was high at Queenstown, but wheat crop was at the ripening growth stage.

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](#)

2021 wheat leaf rust survey summary and results are available.

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

Wheat stripe rust. To date, stripe rust has been reported from twelve states: Texas, Oklahoma, Kansas, South Dakota, Michigan, Louisiana, Mississippi, Georgia, North Carolina, California, Oregon, and Washington. The disease is severe in the eastern Pacific Northwest.

Kansas – Only trace levels of stripe rust in the mid to upper canopy were observed in the state in 2022.

Michigan – Stripe rust was first reported in Mason, Ingham County, on June 10. Disease incidence and severity were very low.

South Dakota – Stripe rust was first observed in Brookings on June 15.

Washington – During the June 1st wheat fields scout of the Palouse region in Whitman County WA and Latah County ID, there was no stripe rust in breeding nurseries and commercial fields. In the artificially inoculated trials, the disease was severe on lower leaves and moderate on the upper canopy of winter wheat but at the early stage on spring wheat. Winter wheat growth stages ranged from Feekes 7 to 10 and spring wheat Feekes 2 to 5 at the scouting time. By mid-June, natural stripe rust had developed and spread quickly in the eastern part of the state as favorable weather conditions persisted in the area. Stripe rust was at the highest severity on susceptible winter wheat varieties and increased significantly on spring wheat in nurseries at Walla Walla and Adams Counties. Stripe rust is up to 80% severity on flag leaves of winter wheat and developing on spring wheat in the experimental fields at Pullman, Whitman County. The disease was common in the commercial farms growing winter wheat UI Magic, Curiosity, and Stingray in Adams, Benton, Franklin, Walla Walla, and Whitman counties. *Puccinia striiformis* was also found on goatgrass and a few other types of grass. Low levels but active pustules of stripe rust pathogen were reported previously from eastern Washington (see Cereal Rust Bulletin #2).

Oregon – Wheat stripe rust is severe in the nurseries at Hermiston, Umatilla County. Previously, stripe rust was found only on wild grass in Umatilla County and at low levels in Gilliam and Morrow counties (see Cereal Rust Bulletin #2).

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. Phenotyping of oat stem rust samples from Florida and Louisiana has identified the pathogen as race TGN, the dominant race in the last two years in the United States.

Oat crown rust. Crown rust ranged from 20 – 80% incidence and 1– 20% severity in fields at Escambia and Elmore counties in Alabama. Previously, oat crown rust was reported from Texas, Louisiana, Florida, and Georgia at low to high disease pressure (see Cereal Rust Bulletin #1).

Barley leaf and stripe rust. There have been no new observations of barley leaf and stripe rust since they were reported from Virginia, California, and Washington, respectively (see Cereal Rust Bulletin #2).

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
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 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.