



# 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](mailto: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](mailto: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 seventeen states and was generally low in most states.
- The end-of-season stripe rust report.
- Oat stem rust was reported in South Dakota.
- New observations of oat crown rust were from South Dakota, Minnesota, and New York.
- Barley leaf rust was observed in South Dakota.
- Rye stem and rye leaf rust were found in New York.
- *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 July 26, higher than normal temperatures prevailed in most parts of the country. Like the extreme heat periods earlier this growing season, areas across the central and southern Plains had the most agricultural impact. The region experienced record-breaking heat, having daily temperatures in the three digits. Chadron, NE, reported its highest temperature of 111° F since August 1926. However, north Plains and part of the Midwest escaped the crop-withering heat as the temperature remained below 95° F and experienced scattered showers. Significant rainfall occurred in most parts of the East. In the Northwestern, the hot weather quickens winter wheat maturation and harvesting and accelerates summer crop development. Hot and humid conditions covered the South. Topsoil moisture was up to 91% very short to short on July 24.

**Crop conditions.** According to the July 26 report, 77% of the nation’s winter wheat acreage had been harvested, five percentage points below last year and three points below average. Eighty-six percent of spring wheat has headed nationwide, ten percentage points behind both the previous year and the five-year average. On July 24, 68% of the spring wheat was rated in good to excellent condition, 59 points above the same time last year. As of July 24, 94% of the 2022 oat acreage had reached the headed stage, six percentage points lower than last year and four points below average. Twenty-two percent of the oat acreage had been harvested, seven percentage points behind last year and three points behind the five-year average. On July 24, 55% of the nation’s oat acreage was rated in good to excellent condition compared to 36% at the same time last year. Ninety-three percent of the barley acreage has headed nationwide, two percentage points behind both last year and the five-year average. On July 24, 55% of the 2022 barley was rated in good to excellent condition, 33 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.** To date, leaf rust has been reported in seventeen states: Texas, Oklahoma, Kansas, South Dakota, North Dakota, Minnesota, 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 and at moderate level on susceptible cultivars.

*South Dakota* – Wheat leaf rust was first reported on June 22 at Brookings. Severity and incidence were low, and the disease appeared late to impact yield potential. Little to no rust observations were made during the state-wide small grain rust survey conducted in July. Over 50 wheat fields in multiple counties were scouted. Only scattered wheat leaf rust was seen on the susceptible spring wheat Morocco at Campbell County. According to Dale Anderson, Department of Agriculture South Dakota, this year had the lowest cereal rust he had ever seen during a state survey.

*North Dakota* – Low levels of wheat leaf rust were reported from Cass and Hettinger Counties in mid-July.

*Minnesota* – On July 5, low to moderate leaf rust severity was observed on susceptible winter wheat at the University of Minnesota research fields in Ramsey County. Plants were senescing quickly due to the hot weather. Wheat leaf rust was found at moderate to high severity levels in plots of Morocco in southern and southwestern Minnesota on July 20. Trace levels of leaf rust were found on spring wheat cultivars grown in Minnesota and North Dakota. In the last week of July, leaf rust was at a moderate severity on soft white spring wheat cultivars in research plots in west central Minnesota. Hard red spring wheat cultivars had trace levels of leaf rust. The plots of susceptible cultivar Morocco had dried down completely.

*New York* – Heavy leaf rust was seen on Triticale in Willsboro, Essex 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](#)

**2021 wheat leaf rust survey summary and results are available.**

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

**Wheat stripe rust.** [Click for the end-of-season stripe rust report.](#)

**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.** About 30% severity and 20% incidence of stem rust was observed on susceptible varieties in the state spring oat nurseries in Brookings County, South Dakota. Oat stem rust was previously reported in Florida and Louisiana, and samples from both states were identified as race TGN, the dominant race in the last two years in the United States (see [Cereal Rust Bulletin #3](#)).

**Oat crown rust.** Oat crown rust was reported from eight states (Texas, Louisiana, Alabama, Georgia, Florida, New York, South Dakota, and Minnesota) during the 2022 cropping season. The disease was moderate to severe in susceptible varieties in most states.

*South Dakota* – In mid-July, moderate severity and incidence of crown rust were observed in the state spring oat nurseries at Volga in Brookings County.

*Minnesota* – Trace levels of oat crown rust were found on the susceptible cultivar Marvelous in southern and southwestern Minnesota on July 20.

*New York* – Moderate to severe oat crown rust was reported from the Mohawk River Valley counties in central to eastern New York. Greater than 80% incidence and 1 – 20 % severity of crown rust were found on susceptible (Corral) and resistant (Steuben, Hayden) spring oat in the nurseries at Ithaca, Tompkins County. Hayden was known to be resistant to *Puccinia coronata* before 2022. Dr. Gary Bergstrom speculated the arrival of new virulence in the crown rust population. Resistant breeding lines SD150015, BC02004, and BC02005 had a few crown rust pustules, and samples from the varieties were received at the Cereal Disease Laboratory. Wild oat on the roadside in Otsego County was severely infected with crown rust. The disease incidence ranged from 20 – 80%, but the severity was greater than 80%. Aecia were prevalent on buckthorn throughout the state in May and probably influenced the crown rust severity.

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

**Barley leaf rust.** Light infection of *Puccinia hordei* was observed in a commercial barley field in Lincoln County, South Dakota. In a small grain nursery in Brookings County, SD, low levels of leaf rust were found on Legacy and Celebration varieties. Previously, barley leaf rust was reported in Accomack County, Virginia ([see Cereal Rust Bulletin #2](#)).

**Barley stripe rust.** See wheat stripe rust.

**Rye stem rust.** Rye stem rust incidence ranged from 1 – 20% at the small grain nurseries in Tompkins County, New York. The disease severity varied within the plots of KWS Progas, KWS Tayo, and Danko cultivars. Rust samples were received at the Cereal Disease Laboratory.

**Rye leaf rust.** In early July, moderate to severe leaf rust was observed on rye in research plots near Lake Champlain in northern New York. Previously, rye leaf rust was found in Yolo County, California ([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](mailto:CEREAL-RUST-SURVEY@LISTS.UMN.EDU)

Or, to: Dr. Oluseyi Fajolu ([oluseyi.fajolu@usda.gov](mailto: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](mailto:xianming@wsu.edu) or [xianming.chen@ars.usda.gov](mailto: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](mailto: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.