



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>)

- Severe wheat stem rust was reported in Louisiana.
- Wheat leaf rust was found in Kentucky and Virginia.
- Wheat stripe rust is confirmed in twelve states and differ in the level of severity across the country.
- There is no new observations of oat crown rust and oat stem rust since they were reported to be widespread and severe in Louisiana.
- Barley stripe rust is present in California, Oregon, and Washington.
- Barley leaf rust was observed in Texas and Virginia.
- *2019 wheat leaf rust race survey results are available.*
- *Request for cereal rust observations and samples in 2020.*

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 2, hot weather rapidly advanced crop development and fieldwork in a large portion of the Plains and West. This was much-needed heat, especially in the northern Plains and Midwest areas that experienced extended periods of cool to freezing conditions. The Pacific Northwest ended May with above-average showers while drought persisted in the southern Plains. The topsoil moisture was rated 40% short in Texas on May 31. In the South, Tropical Storm Bertha accompanied by heavy rain moved through most parts of Florida and the Carolinas.

Crop conditions. According to the June 2 report, 77% of winter wheat has headed nationwide, four percentage points higher than last year but four points below the five-year average. Three percent of the nation’s winter wheat acreage was harvested by May 31, compared to one percent at the same time last year and two percent over the past five years. Fifty-one percent of the 2020 winter wheat crop was rated in good to excellent condition, thirteen percentage points below the same time last year. On May 31, 91% of the nation’s spring wheat was seeded, one percentage point above last year but five points below average. Sixty-seven percent of the spring wheat acreage had emerged, four percentage points higher than last year but thirteen points below average. Eighty percent of this year’s spring wheat was reported in good to excellent condition, six percentage points above the same time last year. As of May 31, 96% of the nation’s oat acreage was seeded, seven percentage



points above last year but one point below the five-year average. Eighty-six percent of the oat crop had emerged, twelve percentage points higher than the previous year but three points below average. Twenty-seven percent of the oat acreage had headed, five percentage points above last year but two points below average. Seventy-one percent of the nation's oat acreage was reported in good to excellent condition, thirteen percentage points above the same time last year. On May 31, 93% of the 2020 barley acreage was planted, compared to 92% at the same time last year and 96% over the past five years. Seventy-four percent of the nation's barley had emerged, six percentage points above the previous year but seven points below average. Sixty-nine percent of the barley acreage was rated in good to excellent condition, nineteen percentage points below the same time last year.

Wheat stem rust. In early May, a few lines in a state wheat trial in Rapids County (central Louisiana) was severely infected with stem rust beyond the level of rust ever seen in that area. Genotyping and phenotyping of samples from these lines have identified this to be caused by Pgt race QFCSC. The previous report indicated that low to moderate stem rust was present in LA and OK (see [Cereal Rust Bulletin #1 and #2](#)). A stem rust sample from Payne county (OK) was determined to be race QFCSC.

Wheat leaf rust. Wheat leaf rust had not progressed significantly in Oklahoma since the last report and recently seen in Kentucky and Virginia. Previously, severe leaf rust was reported in Texas and low levels in Louisiana and Kansas.

Oklahoma – During wheat disease survey in the northern and north central OK on May 19, moderate to severe leaf rust was found in a variety trial near Lamont, but plants were maturing. Low levels of leaf rust and stripe rust were observed in fields near Alva and Cherokee. The weather was too dry in this region for disease development. Wheat in the area ranged from late milk to soft dough growth stages. Wheat foliar diseases in Oklahoma are less active as the crop is steadily approaching senescence.

Kentucky – On May 22, fields in Fulton and Graves Counties were scouted, but only a few soft red winter wheat fields had low levels of leaf rust. The majority of fields surveyed were without leaf rust or stripe rust. Wheat in the western KY was approaching the soft dough growth stage.

Virginia – Eleven collections of wheat leaf rust were received at the Cereal Disease Laboratory from four counties in Virginia. Disease severity ranged from moderate to high.

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](#)

2019 wheat leaf rust survey summary and results are available.

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

Wheat stripe rust. Stripe rust is widespread in Kansas but at low severity. The previous report indicated low to high stripe rust incidence and severity across Oklahoma. So far this year, stripe rust has been reported from twelve states: Texas, Louisiana, Oklahoma, Kansas, Nebraska, California, Oregon, Washington, Michigan, Illinois, Kentucky, and Virginia (see [Cereal Rust Bulletin #1 and #2](#)).

Kansas – By May 29, stripe rust had moved to the upper canopy in thirty-one out of the forty-eight counties where the disease is present across the state. These include commercial and experimental fields. Although stripe rust is widespread across the state, disease incidence and severity remain low in many locations. A warming trend is expected

and would help limit disease development and progression. There was an increased incidence of stripe rust on SY Monument, LCS Chrome, Larry, and Zenda varieties that were considered resistant to *Puccinia striiformis* in previous seasons. Wheat growth stages ranged from Feekes 9 to 10.5.

Oklahoma – See wheat leaf rust.

Washington – Stripe rust is severe as usual in the winter wheat nurseries at Mount Vernon in Skagit County. The disease had reached 100% severity on susceptible varieties in May. In Walla Walla, stripe rust severity had increased significantly from low levels in April to 100S in the first week of June. Heavy stripe rust was found on UI Magic variety that was rated moderately susceptible in 2019. On June 4, susceptible winter wheat around Pullman in Whitman County was rated 50% incidence and 20% severity. Stripe rust was observed on spring wheat in all sites surveyed. Low levels of stripe rust, approximately 0.1% incidence, were observed in the experimental plots at Lind in Adams County. Winter wheat ranged from flowering to soft dough growth stages.

Oregon – In early June, stripe rust was 100S on susceptible varieties in the winter wheat nurseries at Hermiston in Umatilla County. The rust was found in spring wheat nurseries at this location. Winter wheat variety ‘Bobtail’, previously considered highly resistant to *P. striiformis*, was found with more rust than ever before in experimental fields at Corvallis in Benton County. Stripe rust was reported on UI Magic variety at Adams in Umatilla County.

Kentucky – A severe stripe rust pressure was observed in a soft red winter wheat field in Fulton County on May 22. Low levels of the rust were found in a few of all the fields surveyed in Fulton and Graves Counties. Stripe rust was first seen in a wheat trial in Caldwell County at low incidence and severity on May 11. Wheat was at the post-anthesis growth stage at that time.

Illinois – During a wheat disease scout in central and southwest IL in late May, several fields were found with low levels of stripe rust in the lower canopy. No other rust disease was observed during the survey. Stripe rust is present in thirteen counties, namely Champaign, Clark, Clay, Crawford, Coles, Cumberland, Douglas, Franklin, Jefferson, Madison, Monroe, Perry, and Saint Clair. Wheat fields in the central area were approaching flowering and those in the south were at post anthesis growth stage.

Nebraska – The first stripe rust observation was reported in Thayer County in southeast NE on May 27. The disease was at trace incidence and severity. Wheat fields in the south central and southeast ranged from boot to flowering growth stages.

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 crown rust and oat stem rust. There have been no new observations of oat crown rust and oat stem rust since they were reported to be widespread and severe in Louisiana (see [Cereal Rust Bulletin #1](#)).

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

Barley stripe rust. In early June, stripe rust on susceptible varieties was rated 80S and 40S in winter nurseries at Mount Vernon and Walla Walla, respectively. At these Washington locations, barley ranged from flowering to soft dough stage growth stages. Stripe rust was also reported in California and Oregon.

Barley leaf rust. Barley leaf rust was observed at experimental plots in Weslaco, Texas in February and in Warsaw, Virginia on May 22.

Barley stem rust. This disease has not been reported in the U.S. this year.

Alternate host. Moderate to severe aecial infections on common buckthorn (*Rhamnus cathartica*) were observed in southeastern MN. Light aecial infections of common barberry (*Berberis vulgaris*) were found in southern WI.

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). We understand the challenges associated with movement restrictions at this time. However, if you are able to go to cereal fields, please collect rust samples and send to us. We sincerely thank all those who have assisted us in the past and hope the assistance continues this year, especially during this hard period.

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:

- 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:

Dr. Oluseyi Fajolu/ Dr. Shahryar Kianian
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.isoftware.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.