CEREAL RUST BULLETIN

Issued by:

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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 stem rust was confirmed in Kansas and Washington.
- New observations of wheat leaf rust were reported from Minnesota and South Dakota.
- Wheat stripe rust has been reported from 17 states.
- Oat crown rust was observed in South Dakota and severe on susceptible varieties.
- Oat stem rust was severe on a single breeding line in South Dakota.
- High barley stripe rust pressure was reported from Idaho.
- Barley leaf rust was found in Minnesota.
- *Request for cereal rust observations and samples in 2019.*

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 23, large portions of the country experienced a brief period of heat and high humidity in mid-July. The weekly temperature average was at least 5°F above normal across most parts of the Plains, Midwest, East, and Southwest. Daily-record highs greater than 100°F occurred in the central and southern High Plains from July 18 – 21. However, cool and dry weather persisted in large sections of the West and the southern half of the Plains. This favored harvest of the late-maturing winter wheat. Heavy rain associated with Hurricane Barry persisted in the mid-South. The northern Plains experienced frequent thunderstorms, and fieldwork was slower in parts of this region. By July 21, an acre of winter wheat had not been harvested in South Dakota and Montana, and harvest is far behind compared to 5-year averages.

Crop conditions. According to the July 23 report, 69% of the nation's winter wheat acreage had been harvested by July 21, ten percentage points behind average. Ninety-two percent of spring wheat has headed nationwide, 4 percentage points behind last year. Seventy-six percent of the spring wheat crop was reported in good to excellent condition, 3 percentage points below the same time last year. Ninety percent of barley has headed nationwide by July 21, three percentage points behind last year. Seventy-six percent of the barley crop was reported in good to excellent condition, 5 percentage points below the same time last year. Ninety-four percent of oat has headed, 5 percentage points behind last year. Twelve percent of the nation's oat acreage had been harvested, eleven percentage points behind last year and 10 points behind average. Sixty-four percent of the oat crop was reported in good to excellent condition, 8 percentage points below the same time last year.

Wheat stem rust. Wheat stem rust was confirmed in Kansas and Washington. Previously, stem rust was reported from Illinois at low disease severity, and Indiana at high severity (see Cereal Rust Bulletin #2).

Kansas – Wheat stem rust was first confirmed in northwest Kansas in early July. Trace to 20% severity was observed on heads and peduncles. By mid-July stem rust was found on Winterhawk and TAM114 varieties in Wallace County, northwest Kansas. Symptoms appeared on the heads and peduncles at low levels of disease incidence and severity. Wheat crop was at the maturing stage.

Washington – Stem rust was found in winter wheat nurseries in Pullman (Whitman County) and Central Ferry (Garfield County) during field survey on July 9. A few spots of stem rust were found on Rosalyn cultivar in an experimental field near Pullman and a low level of stem rust was present in Central Ferry field. This is the first report of wheat stem rust in Washington.

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

Wheat leaf rust. Wheat leaf rust was present at low to moderate levels in wheat fields scouted during the cereal rust survey at the University of Minnesota Southern Research Centers and at the South Dakota State University Research Farms on July 10 – 11. Previously, wheat leaf rust was reported from Washington, Illinois, Ohio, Texas, Oklahoma, Kansas, Nebraska, Louisiana, Mississippi, North Carolina and Virginia (see Cereal Rust Bulletin #2). There have been no new reports of leaf rust from these states besides Washington.

Washington – Wheat leaf rust was found in winter wheat nurseries in Garfield County and in spring wheat nurseries in Walla Walla County on July 9. There was no leaf rust in the commercial fields scouted during the survey. Previously, leaf rust was reported from Skagit County, but leaf rust severity had doubled the previous report.

Minnesota – Leaf rust was present mostly on lower leaves of susceptible cultivar, but the resistant cultivars were free of rust pustules in the spring wheat variety trials at the research fields in Waseca in Waseca County. Similarly, in the research plots at Lamberton in Redwood County, there was no leaf rust on unsprayed spring wheat except on Morocco, a very susceptible cultivar. Only a trace level of leaf rust was found on winter wheat, but the variety trial plots had been sprayed with fungicide. On July 25, a low level of leaf rust was found in a spring wheat field in Stearns County. Spring wheat had passed heading, and winter wheat was at the maturing stage.

South Dakota – On July 11, rust was not found on spring wheat after scouting research plots near Brookings, but a low level of leaf rust was present on mowed winter wheat pathway. Leaf rust was moderate to severe on unsprayed winter wheat plots at the South Dakota State University Research Farm in Aurora. By July 23, up to 50% incidence and 60% severity of leaf rust was observed on Faller and Prosper varieties in the spring wheat research plots at the South Dakota State University Northeast Research Farm. Spring wheat was at soft dough 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

2018 wheat leaf rust survey summary and results.
Please visit: Wheat leaf rust race survey results

Wheat stripe rust. Stripe rust was found in Idaho. So far this year, wheat stripe rust has been reported from 17 states: Washington, Oregon, Idaho, California, Texas, Oklahoma, Kansas, Nebraska, Colorado, Louisiana, Mississippi, Tennessee, Kentucky, Indiana, Michigan, South Dakota, and Minnesota.

Washington – Low levels of wheat stripe rust were found in some fields after scouting winter wheat fields in Whitman, Garfield, Columbia, Walla Walla, and Asotin Counties on July 9. Winter wheat ranged from milk to mature growth stages. Wheat stripe rust pressure was previously reported to be low in eastern Washington but high in the northwest area (see Cereal Rust Bulletin #2).

Idaho – A trace level of stripe rust was detected in two spring wheat fields in Latah County. Low level of wheat stripe rust was found in winter wheat fields in Nez Perce and Latah Counties. In contrast, stripe rust pressure was high on spring wheat in the research plots at Aberdeen in Bingham County. Spring wheat was at milk to soft dough stage.

Minnesota – Low level of wheat stripe rust was found on the Prosper cultivar in the spring wheat trials at Kimball, Stearns County. Previously, scattered stripe rust was reported from Ramsey County (see Cereal Rust Bulletin #2).

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 crown rust. Oat crown rust was observed in South Dakota. Crown rust was previously reported on oat in Louisiana and Minnesota (see Cereal Rust Bulletin #2).

Minnesota – Low to moderate levels of crown rust were present on oat flag leaves in the variety trials at the University of Minnesota Southern Research Center in Waseca County on July 10. Moderate level of crown rust was found in multiple oat fields in Stearns County on July 25. Oat crop was at soft to hard dough stage.

South Dakota – On July 11, scattered crown rust early infection was observed in oat variety plots at the South Dakota State University Research Farm in Volga. On July 23, approximately 100% incidence and severity greater than 60% of crown rust was found on many oat varieties in Codington County. Oat crop was at soft dough stage.

Oat stem rust. Approximately 70% severity of oat stem rust was found on one breeding line at the South Dakota State University Northeast Research Farm on July 23. Previously, oat stem rust was reported from Baton Rouge, Louisiana (see Cereal Rust Bulletin #1)

Barley stripe rust. A high severity of stripe rust was observed on barley varieties in the research plots at Aberdeen, ID. Crop stage varies from milk to soft dough. Previously, high and low severity of stripe rust was reported from northwestern Washington and eastern Washington, respectively (see Cereal Rust Bulletin #2).

Barley leaf rust. Leaf rust was found at low to moderate levels in multiple barley fields in Stearns County, MN. This is the first report of barley leaf rust in the country this year.

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

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 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: 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 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 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: 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 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.