



*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 list. To subscribe, please visit:  
<http://www.ars.usda.gov/Main/docs.htm?docid=9970>

Or, send an email to: [Mark.Hughes@ars.usda.gov](mailto:Mark.Hughes@ars.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>)

- Low levels of wheat stem rust were found in southern Texas.
- Wheat leaf rust has been reported from southern Texas to southern Nebraska and east to Mississippi and North Carolina.
- Wheat stripe rust appeared early in 2016 and was active in areas of the Pacific Northwest, Great Plains, Gulf States and mid-Atlantic.
- Low levels of oat stem rust were found in southern TX and southeastern Louisiana.
- Oat crown rust has been found in plots in extreme southern Texas and southeastern Louisiana.
- Barley leaf rust was found in plots and watermelon windbreaks in southern Texas.
- *2015 Wheat leaf rust race survey results now available.*
- *Request for cereal rust observations and samples in 2016.*

For original, detailed reports from our cooperators and CDL staff, please visit the [Cereal Rust Situation](#) (CRS) reports page on the [CDL website](#) or click the [CRS](#) link found throughout the bulletin.

Dry conditions persisted across the central and southern High Plains except for some showers in Texas the past week. Abnormally dry conditions have developed in northern Oklahoma and much of Kansas, while moderate drought conditions are appearing in areas of western Oklahoma and southwestern Kansas. Large temperature swings occurred in the plains with temperatures as high as 80 F in Kansas with freezes as far south as the Texas Panhandle. Heavy rains fell in the Southeast with local rain totals of over 4 inches, while light precipitation fell in the northern Mid-Atlantic States.

Nationally, 59% of the winter wheat crop was reported in good to excellent condition compared to 44% last year at this time. By April 3, 29% of the oat crop was seeded, six percentage points behind the 5-year average. Six percent of the barley crop was planted by April 3, 15 percent behind the 5-year average.

**Wheat stem rust.** Low levels (trace to 10% severity and <5% incidence) of wheat stem rust were found on Line E, Morocco spring wheat and Panola winter wheat in stem rust sentinel plots planted at Weslaco, and on barley used as windbreaks of watermelon production fields in Rio Grande valley in extreme southern Texas the first week of March. Stem rust on barley was found in nursery plots in Castroville in south Texas the last week of March. In early April stem was found at 20% incidence and 20% severity on barley in plots at Corpus Christi in southeastern Texas.

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

**Wheat leaf rust.** Wheat leaf rust has been found from extreme southern Texas north to southern Nebraska and east to Mississippi, North Carolina and Delaware.

*Texas* – Wheat leaf rust on the spring wheat cultivar Morocco had reached 85S with 100% incidence in sentinel plots at Weslaco in extreme southern Texas by early March. At Castroville and Uvalde in south Texas, wheat leaf rust was



spreading uniformly in nurseries by March 2. Some spring wheat entries had reached 100S. By March 10, leaf rust was found throughout much of Texas from the Oklahoma border to the Gulf Coast, the exception being the Texas High Plains where no rust had been reported. Leaf rust was more prevalent than stripe rust at College Station. Conditions were good for further development and growers were applying fungicides to protect yield potential.

*Oklahoma* – Scattered leaf rust pustules were found around Stillwater in north central Oklahoma in early February. Leaf rust had overwintered in Oklahoma but not increased very much. By early March, leaf rust was active, but at low levels. Relatively high levels of leaf rust were observed on Endurance and other cultivars in southwestern part of the state by March 4. Low levels of leaf rust were found around the Stillwater area on lower leaves, indicating the rust most likely overwintered in central Oklahoma. Leaf rust at varying levels was found in north central and southwestern Oklahoma the third week of March. Areas of southwestern and western Oklahoma were in need of additional rain. Wheat development was approaching Feekes 6-7.

*Kansas* – Wheat leaf rust was found in western and northwestern Kansas fields and nurseries in Riley County in northeastern Kansas by March 18. Due to the mild winter the rust likely overwintered in the state. The rust in the western counties was still active by April 1, but remained at low levels in most fields. Wheat in the state was jointing in much of the state and approaching flag leaf emergence in southeastern parts of the state. The crop was about 2-3 weeks ahead of average maturity.

*Nebraska* – Trace levels of wheat leaf rust were found in wheat fields in Nuckolls County in south central Nebraska on March 30. The rust was found in every field surveyed.

*Louisiana* – Wheat leaf rust at less than 1% incidence, but high severity in some areas was found in plots at Alexandria in central Louisiana on March 1.

*Mississippi* – Wheat leaf rust was found in a commercial field in eastern Mississippi in early February. On March 23, leaf rust was reported on the soft red winter wheat cultivar Georgia Gore in a nursery at Canton in central Mississippi. Due to wet conditions last fall, very little wheat was planted in the state. Leaf rust was found in winter wheat fields in eastern Mississippi along the border with Alabama on April 4 and is now being found throughout the wheat production areas in the state. Conditions have been very conducive for further rust development with continued rainfall and warm temperatures.

*Arkansas* – Leaf rust was found in Desha and Jefferson Counties in southeastern Arkansas in early March.

*North Carolina* – Leaf rust is widespread and unusually early and at heavy levels across the Coastal Plain of North Carolina due to the warm winter.

*Delaware* – Leaf rust was developing on wheat at pre-jointing stage in early February.

**Wheat leaf rust 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](#)

**2015 wheat leaf rust survey summary and results.** Please visit: [Wheat leaf rust race survey results](#).

**Wheat stripe rust.** Oregon experienced a very mild winter with stripe rust appearing early this year (February). Stripe rust appears to have overwintered in areas in the Great Plains as well as Oregon and Idaho.



*Oregon* – Stripe rust was observed in commercial fields of Rosalyn in the northern Willamette Valley the first week of February, indicating it likely overwintered in the valley. Stripe rust was not found in the southern Willamette Valley at the time. The second week of March, stripe rust was found in an irrigated field of the winter wheat cultivar Mary near Hermiston in eastern Oregon.

*Washington* – Stripe rust was found on susceptible winter wheat cultivars in nurseries at Central Ferry and a nursery field at Walla Walla as well as commercial fields at Horse Heaven Hills in eastern Washington on March 3. Incidence ranged from 1-3% in the nurseries and less than 1% incidence in the commercial fields. Stripe rust development is much earlier than average this year.

Stripe rust was found in only one of the fields surveyed in Whitman County in eastern Washington on March 30. In Lincoln, Adams and Franklin Counties stripe rust was easier to find and reached 5% prevalence in some fields. The rust was found mostly on the lower leaves from fall infections, but some newer infections were observed on upper leaves. Wheat ranged from Feekes 2 to 6. The rains in March and warming conditions favor increased stripe rust development. Many fields in eastern Washington have been sprayed with fungicides. As is typical, wheat stripe rust was found on all winter wheat entries in plots at Mount Vernon in western Washington by the mid-March.

*Idaho* – Stripe rust was found in a commercial field (Feekes 2) south of Aberdeen and a field of volunteer wheat between American Falls and Pocatello in eastern Idaho on April 4. Additionally, stripe rust was confirmed in the Wendell area west of Twin Falls in south central Idaho. The wheat cultivar in all fields was the soft white winter wheat Brundage. Despite the minimal snow coverage and cold temperatures it appears the stripe rust overwintered.

*Louisiana* – Stripe rust at less than 1% incidence, but with high severity, was found in nurseries at Alexandria in central Louisiana on March 1. Stripe rust was also found in nurseries at Winnsboro in northeastern Louisiana.

*Mississippi* – Several large stripe rust hot spots were found in nursery borders in Issaquena County in western Mississippi the fourth week of March. Wheat ranged from Feekes 5/6 to Feekes 8/9. Stripe rust was found in a cover crop trial, but not the nursery at Stoneville in western Mississippi. Wheat was at Feekes 10.1. On March 23, stripe rust was reported on the soft red winter wheat cultivar Georgia Gore in a nursery at Canton in central Mississippi. Due to wet conditions last fall, very little wheat was planted in the state.

Severe stripe rust infection was found in a field of Beretta wheat in Bolivar County in northwestern Mississippi the last week of March. The wheat had just begun to head out and the farmer thought perhaps he had herbicide damage, but it was actually stripe rust. The rust was sporulating, however, telia was present as well. As temperatures increase the stripe rust development will likely slow. This was one of the worst infected fields Tom Allen has seen in his nine years. Several other wheat fields in the area had small stripe rust hot spots.

*Arkansas* – Stripe rust was found in Desha, Jefferson and Woodruff Counties in southeastern and eastern Arkansas, respectively, by early March. Low incidences with a few hot spots were observed in Desha and Jefferson Counties.

*North Carolina* – Low to medium levels of stripe have been observed the past week in a few fields in Raleigh and Plymouth (northeastern North Carolina) and near Goldsboro in the central Coastal Plain. The stripe rust near Goldsboro had been present for some time. Conditions have been conducive for stripe rust in the Mid-Atlantic area.



*Virginia* – A plot at Warsaw in eastern Virginia was found heavily infected with stripe rust the last week of March. This is very early for stripe rust to appear in the area.

*Texas* – Stripe rust was uniformly spreading in the lower canopy in nurseries at Castroville on March 2. Infections reached 70S and beyond on some lines. At Uvalde the stripe rust had progressed more. Wheat ranged from Feekes 5-10 in the nurseries. Stripe rust was found at low severities, but with incidence up to 90% on some lines in sentinel plots at Weslaco in extreme southern Texas the first week of March. By March 10, stripe rust was found throughout much of Texas from the Oklahoma border to the Gulf Coast, the exception being the Texas High Plains where no rust had been reported. At College Station stripe rust was found on WB Cedar in February, but leaf rust was more prevalent in the nursery. Fungicides were being applied in commercial fields.

*Oklahoma* – Low incidences of stripe rust were found in the Stillwater area in early March. Rust was found on the upper leaves of the cultivar Pete, indicating the spores had blown in from the south. By the second week of March, stripe rust was more prevalent across the state. Stripe rust was found scattered across fields with some hot spots on a survey from central Oklahoma and southwestern Oklahoma the third week of March. In some fields no stripe rust was found. Some fields in southwestern Oklahoma were in need of rain. Wheat was at Feekes 6-7. The fourth week of March stripe rust varied from low to high severity in central Oklahoma. Wheat ranged from Feekes 7 to 9. The past week had been dry and windy, but there was potential for increased development if rain developed. By the fourth week of March stripe rust was active in many areas of the state, however, it appears stripe rust did not become more severe in areas of central and north central Oklahoma and in some areas stripe rust telia developed.

*Kansas* – Stripe rust was found at generally low levels in southern Kansas by March 18 and was most active in the southeastern part of the state. The winter wheat crop is about 3 weeks ahead of average development (near jointing in the northwest, about a week from flag leaf emergence in south central and southeast). By April 1, stripe rust had been reported in many counties in central and southeastern part of the state. The stripe rust was at low levels on lower leaves in most fields with the exception of southeastern Kansas. With favorable conditions the stripe rust could develop and spread significantly.

*Colorado* – Wheat stripe rust was found in Mesa County in western Colorado in early March. It appears the stripe rust overwintered there. There was heavy stripe rust disease pressure in the fall. This stripe rust is quite isolated from the eastern wheat production areas and not likely a threat to that area. Stripe rust was reported on the highly susceptible cultivar Ripper in the Prospect Valley northeast of Denver the fourth week of March. It seems plausible the stripe rust overwintered in the area. Further development was anticipated with predicted rains and cool temperatures.

**Please send wheat and barley stripe rust collections as soon as possible after collection to:**

Dr. Xianming Chen  
USDA-ARS  
361 Johnson Hall  
P.O. Box 646430  
Washington State University  
Pullman, WA 99164-6430  
email: [xianming@wsu.edu](mailto:xianming@wsu.edu)



**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.

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

**Oat stem rust.** Trace to 10% severity and <5% incidence of oat stem rust was observed on *Avena strigosa* (black oats) that was used as a green manure crop in Rio Grande Valley, Texas. A few pustules of oat stem rust were found in a plot at Baton Rouge in southeastern Louisiana on March 4. Stem rust does not typically develop in the state to any extent until early April.

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

**Oat crown rust.** Oat crown rust was found at fairly high incidence, but low severity in susceptible spreader rows (Brooks) in plots at Baton Rouge in southeastern Louisiana on March 4. The plots ranged from not yet jointed to early flag leaf. Additional development was expected. Oat crown rust up to 80S and 100% incidence was found on Marvelous oat in sentinel plots at Weslaco in extreme southern Texas on March 4.

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

**Barley leaf rust.** Barley leaf rust was severe in hooded barley windbreaks in watermelon fields at McAllen in extreme southern Texas the second week of March. At College Station, barley leaf was found in plots the second week of March. Barley leaf rust severities ranged from light to heavy in plots at Weslaco in extreme southern Texas in mid-late March. Low levels of barley leaf rust were found in plots at Castroville in south Texas on March 29.

**Barley stem rust.** See wheat stem rust section.

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



## 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 much more 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](mailto:CEREAL-RUST-SURVEY@LISTS.UMN.EDU) \*

Or, to: Mark Hughes ([Mark.Hughes@ars.usda.gov](mailto:Mark.Hughes@ars.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*



Cereal Disease Laboratory ([www.ars.usda.gov/mwa/cdl](http://www.ars.usda.gov/mwa/cdl))

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 if possible, 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 to:**

Dr. Xianming Chen  
USDA-ARS  
361 Johnson Hall  
Washington State University  
Pullman, WA 99164-6430

**Thank you in advance for your assistance!**

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**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 Mark Hughes ([Mark.Hughes@ars.usda.gov](mailto:Mark.Hughes@ars.usda.gov)).

All messages sent to the list are archived on the CDL website:

<http://www.ars.usda.gov/Main/docs.htm?docid=9757>



Cereal Disease Laboratory ([www.ars.usda.gov/mwa/cdl](http://www.ars.usda.gov/mwa/cdl))

### **Identifying rust diseases of wheat and barley**

A [guide](#) developed by the multi-state extension and research committees for small grain diseases, NCERA-184 & WERA-97, is available at:

[http://www.ars.usda.gov/SP2UserFiles/ad\\_hoc/36400500Publications/Rust\\_Diseases\\_National.pdf](http://www.ars.usda.gov/SP2UserFiles/ad_hoc/36400500Publications/Rust_Diseases_National.pdf)

\*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.

