April 11, 2022

COLORADO WHEAT DISEASE NEWSLETTER

Dr. Robyn Roberts
Field Crops Pathologist and CSU Assistant Professor
Robyn.Roberts@colostate.edu*
970-491-8239; @RobynRobertsPhD (Twitter)
*Email is the best way to reach me

INTRODUCTION

Welcome to a new season of the Wheat Disease Newsletters! My name is Robyn Roberts and I joined Colorado State University in August 2020 as the new field crops pathologist and assistant professor. I am excited to bring you the newsletters again this season, and I am looking forward to connecting with you all in the coming year. If you have pathology concerns, please don't hesitate to reach out and/or send photos. The best way to reach me is by email: Robyn.Roberts@colostate.edu.

A NOTE ABOUT VIRUSES

Early last year, there were concerns about resistance against *Wheat streak mosaic virus* (WSMV) breaking down in Guardian and other varieties carrying WSMV resistance (see Disease Newsletter from April 26, 2021). Dr. Punya Nachappa (CSU entomologist and Associate Professor) and I have run many tests that show that this does not appear to be the case; the WSMV resistance in Guardian and other PlainsGold varieties is holding up against the current WSMV strains in Colorado, and we will continue to monitor the resistance this year.

We discovered that the concerning samples had very high levels of *Triticum mosaic virus* (TriMV), which is a closely-related but different virus, and which was very likely causing the virus symptoms. The resistance that works against WSMV does not work against TriMV. However, because TriMV is transmitted by the wheat curl mite like WSMV, using varieties that carry resistance against the mite could help curb TriMV. Importantly, controlling volunteer wheat in the summer plays a major role in controlling mite-transmitted viruses, including WSMV and TriMV, especially since there is no resistance against TriMV.

What about spring-emerging volunteer wheat? Spring-emerged volunteer wheat is less risky as a viral reservoir than summer-emerged volunteer wheat. Decisions about terminating spring-emerged volunteer wheat should be balanced with other agronomic practices and concerns.

DISEASE OBSERVATIONS

No disease observations have been made at this time. Many fields in the northeast part of the state are still emerging and have many large, bare patches and/or many skips. Insect activity appears low at this time, though southwest Colorado reported brown mites earlier in the season; the snow and moisture has controlled their activity. Blue mustard, kochia, and cheatgrass are now emerging in fields.

April 11, 2022

DISEASE WATCH AND MANAGEMENT

Stripe Rust

There are reports of localized, moderate stripe rust pressure in limited areas of Texas, but there are currently no reports of stripe rust in Colorado, Oklahoma, or Kansas. Stripe rust disease is dependent upon cool, wet weather, and the dry conditions across Colorado will likely inhibit and/or limit rust diseases in the near future.

Soil moisture levels are often correlated with stripe rust incidence and can be used as a predictive tool in determining if stripe rust will emerge. This time of year, we look at the soil moisture levels in the southeast, particularly Texas (**Figure 1**). Most of Texas has been very dry since last fall, and is currently experiencing low soil moisture. At this time, between the low incidence of stripe rust in Texas, and the low soil moisture levels in both Texas and Colorado, it seems that stripe rust spore levels will remain low, suggesting a low risk for an epidemic in Colorado during the critical growth stages of wheat. However, soil moisture is only one predictive indicator of risk, and the disease is complicated. Once the disease is detected in Colorado, local weather conditions, varieties/resistance, and management practices will all drive disease development. We will continue to monitor for rusts and provide recommendations for fungicide applications as we reach critical growth stages. Please help us protect our fungicides and prevent fungicide resistance by carefully timing applications, following the label, and only when the disease pressure is appropriate. If you think you see symptoms, please feel free to send photos.

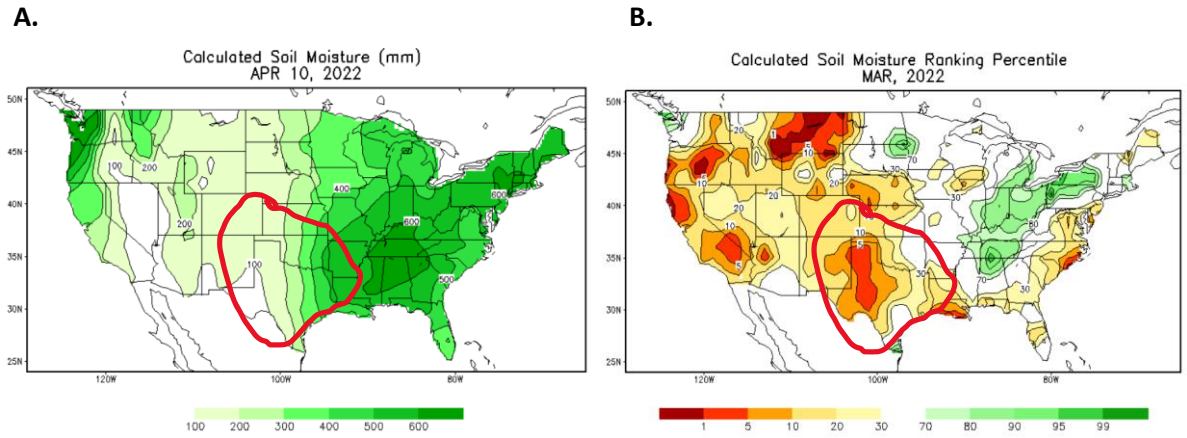

Figure 1. Soil moisture levels as a predictive tool for stripe rust risk. Higher soil moisture levels are typically associated with higher risk. We closely watch the southeastern area of the US (circled in red) for soil moisture levels and the emergence of stripe rust as one tool to predict risk in Colorado. Overwintering spores are not thought to be a major source of disease inoculum in Colorado, and the majority of the spores likely blow up in air currents from the southeast. Data from the National Weather Service Climate Prediction Center,https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst_clim.shtml

Tan Spot

Tan spot can appear this time of year, but due to the dry weather it likely won't cause major problems at this point since the disease is dependent on wet conditions.

Growers are strongly encouraged to regularly scout wheat fields for diseases. Particularly, scout for stripe rust and viruses in the coming weeks.

The **Colorado Wheat Entomology Newsletter**, written by Dr. Punya Nachappa and Darren Cockrell, covers insect/mite pests and management tips. The newsletters are published bi-weekly during the growing season and are available here: https://coloradowheat.org/category/news-events/wheat-pest-and-disease-update/

Do you have a disease that you would like diagnosed? Contact the **Plant Diagnostic Clinic** for sample submission: https://plantclinic.agsci.colostate.edu/ or plantlab@colostate.edu.

Additional resources

1. Information about the 'green bridge' and risks for viral diseases due to volunteer wheat: https://eupdate.agronomy.ksu.edu/article_new/spring-emerged-volunteer-wheat-should-producers-worry-about-wheat-streak-mosaic-virus-and-the-green-bridge-436-4
2. The North Central Regional Committee on Management of Small Grain Diseases (NCERA-184) Fungicide Efficacy for Control of Wheat Diseases Table: https://crop-protection-network.s3.amazonaws.com/publications/fungicide-efficacy-for-control-of-wheat-diseases-filename-2021-04-21-154024.pdf
3. Wheat variety database with stripe rust resistance ratings from field trials: https://wheat.agsci.colostate.edu/database/
4. 'Making Better Decisions' 2021 Colorado Wheat Field Days publication: https://webdoc.agsci.colostate.edu/csucrops/reports/winterwheat/wheatreport_2021_WFD.pdf

CONTRIBUTORS

Many thanks to Ron Meyer and Dr. Todd Ballard, who contributed to this report.