

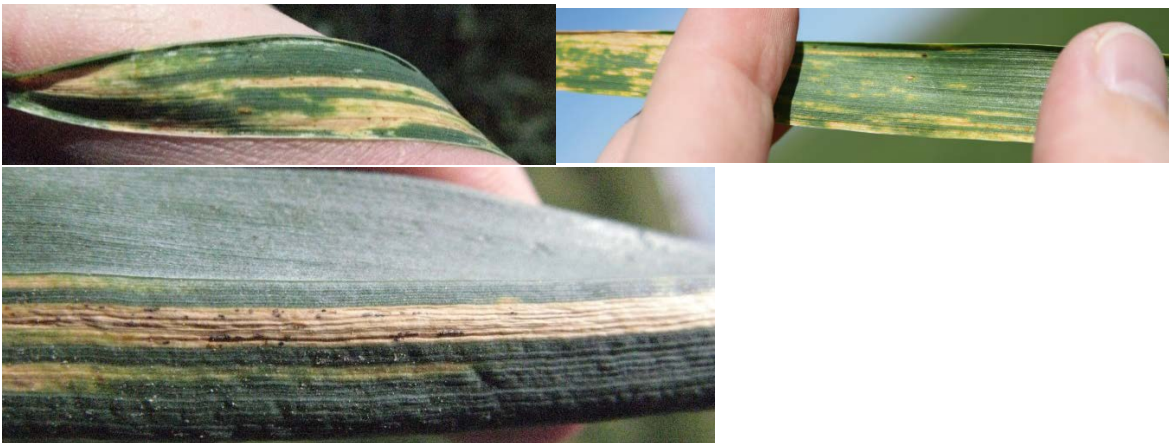
Cropland disease. Overwintering stripe rust widespread, at low levels (15 May, 2017)

I've gotten a lot of calls, emails and texts on stripe rust lately. I've compiled some management information below since I expect it to really blow up after some warmer weather next week. Moisture is favorable, but it's been too cold for disease development throughout most of the state. Disease levels in neighboring states have been very high this year. **Please submit samples** for race typing by WSU (Xianming Chen) – this helps us keep up on any genetic changes in the fungus.

Of note is that symptoms may be noticed right now on resistant varieties. This is NORMAL, since all resistance is high temperature, adult plant resistance. This means they don't express resistance until after jointing (Feekes 4-9) and average night temperatures are above 50 and day temperatures are between 77 and 86F. How do you recognize a plant is resistant? Pictures of resistant reactions are below. Resistant varieties do not need to be sprayed for stripe rust, although conditions are favorable for other leaf-spotting fungi including tan spot and septoria.



Stripe rust on winter wheat – spring symptoms (not in stripes)



Resistant varieties showing a resistance reaction to stripe rust: often mistaken for severe infections. What is happening is the plant is killing off cells in order to prevent the spread of the fungus. The resistance is working.

Making a spray decision in susceptible varieties can be difficult. An economic calculator can be found on the web at <http://cms.msueextension.org/econtools/fungicide/index.html> A table using leaf rust disease severity is below to help you think about possible yield losses. The last stage at which you can spray a fungicide depends on the product, but is generally 30 days or flowering, Feekes 10.51. Please check your label before application to be certain you are not violating the preharvest interval. The later this disease infects, the less yield you are likely to lose. Below is a table from colleagues in Oklahoma where they measured leaf rust (not stripe rust, but it's the best stuff I've got) severity at different growth stages and the effect on yield. If we take the second column, where the severity of rust on the

flag leaf is 25% (obviously visible) and the growth stage is flowering, if you neglect to spray a fungicide to control disease you will lose 15% of the yield. If the disease level is 25% at the milk stage you lose less yield, only 5%. Just a reminder, you can't spray fungicide after flowering.

The full extension publication I took this table from is at:

http://lubbock.tamu.edu/files/2011/10/osufoliarfunghandout04_12.pdf

Table 1. Approximate percent loss of yield caused by leaf rust at combinations of leaf rust severity and growth stage of wheat.

Growth stage	Severity (%) of leaf rust on the flag leaf				
	10	25	40	65	100
Flowering	10	15	20	30	35
Milk	2	5	8	14	20
Soft dough	1	3	4	7	10
Hard dough	1	1	1	3	5

Every year there is a possibility that new strains will overcome the resistance in previously stripe rust resistant varieties. The disease levels in resistant varieties are MUCH less than susceptible varieties. If you do observe active stripe rust pustules over 20% or more of the leaf area of a resistant variety, please notify us and submit a sample for race typing. At this time, varieties are holding up as expected. New strains would show up west of the Rockies as they migrate from Washington.

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Photos of stripe rust on susceptible (top) and resistant (bottom) wheat



Current classifications: Winter Wheat

Resistant	Moderately Resistant	Moderately Susceptible	Susceptible
Colter	Jagalene	Bearpaw	Carter
Judee	Keldin	Brawl CL Plus	Cowboy
Loma	Rampart	Broadview	Decade
Northern	SY Wolf	CDC Falcon	Genou
SY Clearstone 2CL	WB-Quake	Ledger	Jerry
Warhorse			WB4059 CLP
Yellowstone			

Current classifications: Spring wheat

Resistant	Moderately Resistant	Moderately Susceptible	Susceptible
Egan	Breaker	Brennan	AP604 CL
Volt	BuckPronto	Conan	Hank
WB - Rockland	Choteau	Corbin	Jedd
	Duclair	Kelby	Mott
	Fortuna	McNeal	SY Tyra
	Jenna	ONeal	
	Kuntz	SY Soren	
	Reeder	SY605 CI	
	Vantage		
	Vida		
	WB - Gunnison		

Late in the season, you may see black spores form on wheat. These are usually sooty mold, a combination of fungi that colonize dead (maturing wheat, in this case) plant tissues. If we get some late season moisture, these can certainly cause concern, but don't normally cause much damage beyond some black point on seed if moisture is particularly high. If the black spores are associated with stripe rust-infected plants, these are usually the TELIA, a spore structure that is part of the rust life cycle. This spore then infects the alternate host (Berberis or Mahonia spp.; barberry), so it's a dead end for the stripe rust pathogen on wheat. For photos from an article by Yue Jin 2010, see below.



Sooty mold on a wheat head (L) and stripe rust telia in a lesion (R)



Stripe rust infecting a floret (L) and a head w uredinia (orange) and telia (black) (R)

As always, call if there are questions or concerns,
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