Issue 1001

K-STATE Research and Extension

Extension Agronomy

eUpdate

04/25/2024

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy eUpdate Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Kathy Gehl, 785-532-3354 kgehl@ksu.edu, or Dalas Peterson, Extension Agronomy State Leader and Weed Management Specialist 785-532-0405 dpeterso@ksu.edu.

Subscribe to the eUpdate mailing list: https://listserv.ksu.edu/cgi-bin?SUBED1=EUPDATE&A=1

eUpdate Table of Contents | 04/25/2024 | Issue 1001

1. Stripe rust distribution and risk assessment for Kansas - April 25, 2024

The wheat crop is moving quickly and is ahead of schedule in many locations. Now is a critical time to assess the need for a foliar fungicide application. This year, the first stripe rust report was received from Chillicothe, TX, on January 31, where the disease was just starting to take hold. Reports indicated that stripe rust was still active there and in McGregor, TX, in late February. High levels of stripe rust have been reported in multiple locations in Oklahoma, with severe disease noted in Altus, OK.

In Kansas, stripe rust was first detected in Sumner County on April 9, 2024, and since then, low levels have been detected in 14 counties (Figure 1) despite statewide dry conditions. Incidence remains low in most locations. Real-time observations can be seen here: https://wheat.agpestmonitor.org/stripe-rust/. Regions in the state that are expecting high moisture over the coming days may be at risk for more severe disease development.

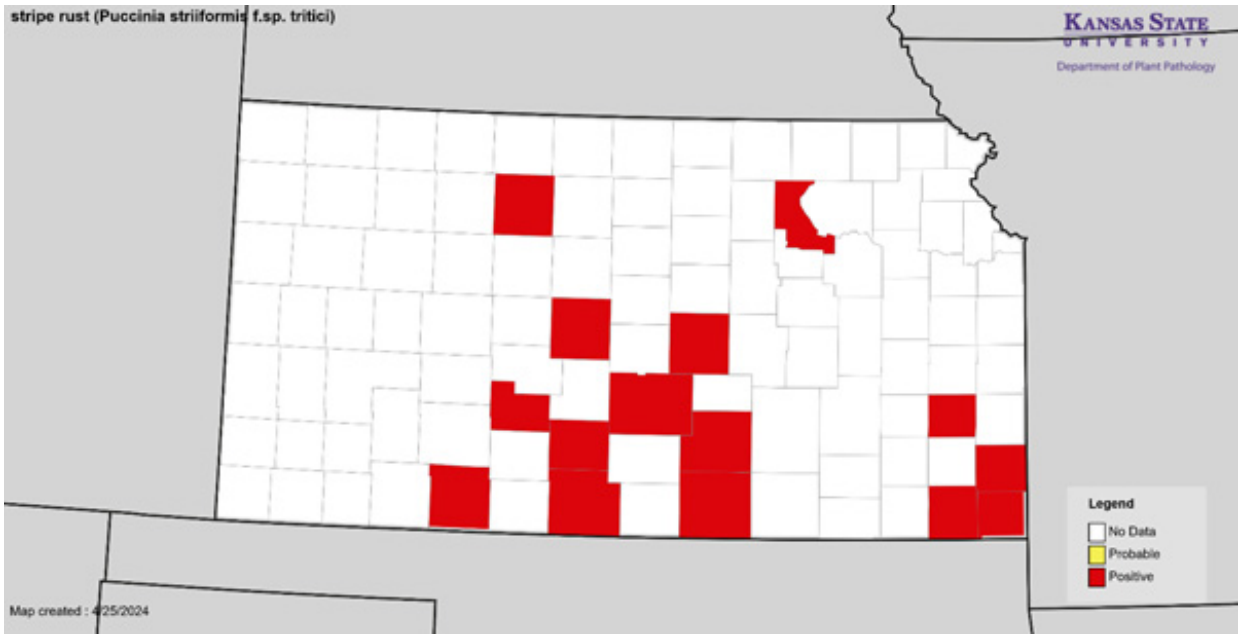

Figure 1. Distribution of stripe rust in Kansas as of April 25, 2024. Map is based on observations from K-State Research and Extension, crop consultants, and wheat producers in the state. Real-time stripe rust progress can be monitored here: https://wheat.agpestmonitor.org/stripe-rust/.

Stripe rust is most yield-limiting when it advances to the upper canopy, particularly the flag leaf. The risk of stripe rust causing yield loss is a function of several things, including:

1. Timing of first local disease detection in relation to crop growth stage (earlier detection can sometimes mean higher risk)
2. Weather conditions: specifically, moisture and relative humidity
3. Variety genetics: varieties with better resistance ratings will generally have lower levels of yield loss than those that are more susceptible. A good rule of thumb is that varieties that rate

3 or better for stripe rust will not benefit from a fungicide application. Variety ratings can be found in the K-State Wheat Variety Disease and Insect Rating Guide: https://bookstore.ksre.ksu.edu/pubs/MF991.pdf

Stripe rust risk assessment for the coming weeks

It is clear that stripe rust is active in the state, but dry weather has kept the disease largely at low levels. We also know that there is a high incidence of stripe rust in several locations in Oklahoma, meaning that there is no shortage of inoculum blowing in from our south. Areas that are forecasted to receive moisture over the coming days are at higher risk for stripe rust to take hold at economic levels. As a reminder, it takes 7-14 days for symptoms to develop after stripe rust infection events. Because of this, it may be a week or two before we know how bad the disease is after the rain that is forecasted in the upcoming days.

Deciding on a fungicide application to control stripe rust

Scouting is a critical first step for stripe rust control. Stripe rust can be identified by characteristic orange lesions that form in straight lines on mature plants (Figure 2). The orange spores will be easily dislodged when you run your finger over a stripe rust pustule.

Figure 2. Classic symptoms of stripe rust. Photo by Kelsey Andersen Onofre, K-State Research and Extension.

Fungicide applications are most beneficial when the level of disease in the field is below 10% severity. University research has demonstrated that applications that protect the fully emerged flag leaf (between Feekes 8 and Feekes 10) are most effective. See this K-State publication for additional information about growth staging wheat: https://bookstore.ksre.ksu.edu/pubs/MF3300.pdf. Applications applied prior to flag leaf emergence will not adequately protect the flag leaf or the head but can keep diseases from progressing up the canopy. Always check and follow product label recommendations to ensure full compliance with growth-stage limitations and pre-harvest intervals.

When stripe rust is severe, we can expect 10-15% yield protection from a fungicide application. Fields with higher yield potential should be prioritized for applications, as drought-stressed wheat with lower yield potential risks not breaking even from a fungicide application even if conditions are favorable from disease.

Many products are rated very good or excellent for stripe rust control. Ratings for individual products can be found here: http://www.bookstore.ksre.ksu.edu/pubs/EP130.pdf. The products listed in the K-State fungicide efficacy publication will generally provide at least 14-21 days of protection. This can vary between products and is also influenced by environmental conditions.

The decision to apply a fungicide should be balanced against the crop's yield potential and the current wheat grain price. Fields with the potential to yield greater than 40 bu/a should be prioritized for a fungicide application.

Kelsey Andersen Onofre, Extension Plant Pathologist
andersenk@ksu.edu

2. Is there any value to starter fertilizer on soybeans?

Soybeans can remove significant amounts of nutrients per bushel of grain harvested compared to other row crops (Table 1). Because of this, soybeans can respond to starter fertilizer applications on low-testing soils, particularly phosphorus.

Table 1. Phosphorus and potassium crop removal values. Source: MF2586 Soil Test Interpretations and Fertilizer Recommendations in Kansas**, K-State Research and Extension.**

Crop	Unit of Yield	Moisture for Yield Basis	P_2O_5	K_2O
Corn	Bushel	15.5%	0.33	0.26
Grain sorghum	Bushel	15.5%	0.40	0.26
Wheat	Bushel	13.5%	0.50	0.30
Soybeans	**Bushel**	**13%**	**0.80**	**1.40**

Typically, corn shows a greater response to starter fertilizer than soybeans. Part of the reason for that is that soils are generally warmer when soybeans are planted than when corn is planted. The typical response in early growth observed in corn is usually not observed in soybeans. However, yield response to direct soybean fertilization with phosphorus and other nutrients can be expected in low-testing soils.

K-State guidelines for soybeans include taking a soil test for phosphorus (P), potassium (K), sulfur (S), zinc (Zn), and boron (B). If soil test results recommend fertilizer, it should either be applied directly to the soybeans or indirectly by increasing fertilizer rates to another crop in the rotation by the amount needed for the soybeans.

The most consistent response to starter fertilizer with soybeans would be on soils that are very deficient in one of the nutrients listed above or in very high-yield-potential situations where soils have low or medium fertility levels. Furthermore, starter fertilizer in soybeans can be a good way to complement nutrients that may have been removed by high-yielding crops in the rotation, such as corn, and help maintain optimum soil test levels.

Banding fertilizer to the side and below the seed at planting is an efficient application method for soybeans. This method is especially useful in reduced-till or no-till soybeans because P and K have only limited mobility into the soil from surface broadcast applications.

However, with narrow-row soybeans, it may not be possible to install fertilizer units for deep banding. In that situation, producers can surface-apply the fertilizer. Fertilizer should not be placed in-furrow in direct seed contact with soybeans because the seed is very sensitive to salt injury.

Soybean seldom responds to nitrogen (N) in the starter fertilizer. However, some research under irrigated, high-yield environments with sandy soils suggests a potential benefit of small amounts of N in starter fertilizer.

Figure 1. Visual differences with starter P fertilizer on low-testing soils. Photo by Nathan Mueller, former K-State Agronomy graduate student and current Associate Extension Educator at the University of Nebraska West Central Research & Extension Center.

Dorivar Ruiz Diaz, Nutrient Management Specialist
ruizdiaz@ksu.edu

3. Relative volatility of different 2,4-D herbicide formulations

Herbicide formulations can dramatically influence herbicide performance, from efficacy to compatibility to shelf life. Many of the properties are determined by adjuvants, stabilizers, or other additives in the formulation. However, the active ingredient can take multiple forms for some postemergence translocated herbicides. This is because chemists can 'swap out' certain chemical building blocks on these molecules. Examples of herbicides that have multiple forms include glyphosate, 2,4-D, and dicamba. This article will focus on the relative volatility of three forms of 2,4-D.

Three common forms of 2,4-D are available on the market: amine, ester, and choline. Many examples of amine and ester formulations exist, but the only products for agricultural uses that contain the choline salt are Enlist One, Enlist Duo, Freelexx, and GrazonPD3. Products for other uses that contain the choline salt are Embed and Embed Extra (orchards) and GameOn (turfgrass).

Applicators wishing to reduce injury to nearby sensitive plants should consider using a product that contains 2,4-D choline. In 2010 and 2011, scientists from the University of Georgia[1] sprayed 2,4-D LV4 (ester), Weedar 64 (amine), and an experimental formulation of 2,4-D choline and used injury to sensitive cotton plants as an indicator. These plants were in the field before the herbicide was sprayed and then taken to a greenhouse 2 days later. The ester formulation was associated with injured cotton plants up to 150 feet away, the amine formulation 10 feet away, and the choline formulation was associated with injury 5 feet away. They also placed sensitive cotton plants under a plastic tunnel after the field application and then took the plants to the greenhouse after 2 days. Plants exposed to the ester formulation had 76% injury, amine 14% injury, and the choline formulation had 5% injury.

Regarding herbicide efficacy, some greenhouse research[2] suggests that 2,4-D amine and 2,4-D choline controlled glyphosate-resistant marestail (horseweed) similarly; however, 2,4-D choline was more effective on glyphosate-sensitive biotypes. Unfortunately, similar data are unavailable in the literature for other weeds, but it is generally accepted that weed control by 2,4-D amine and 2,4-D choline would be similar in most situations.

Regardless of herbicide formulation, using nozzles and pressures that produce relatively larger droplets will reduce herbicide drift. Drift reduction adjuvants can also reduce drift.

References:

[1]Sosnoskie et al. 2015
[2]Ford et al. 2014

Sarah Lancaster, Extension Weed Science Specialist
slancaster@ksu.edu

4. World of Weeds - Fall panicum

While walking corn fields in central and eastern Kansas last summer, I noticed several infestations of fall panicum, also known as smooth witchgrass. As the common name implies, fall panicum is in the genus Panicum, which also includes switchgrass and other ornamental grasses.

Ecology

Fall panicum **(***Panicum dichotomiflorum***)** is a summer annual grass native to eastern North America. It is found throughout the U.S. in most soil types. Fall panicum can tolerate compaction and tends to be more prevalent in wetter soils. Due to its requirement for warm soils, it germinates in late spring or summer. However, due to nitrate accumulation, it can be harmful to livestock.

Identification

Fall panicum seedlings may have a purple hue but are distinguished by many hairs on the lower surface of leaf blades (Figure 1). This characteristic is not present in the mature plant.

Figure 1. Seedlings have dense hairs on the lower leaf surface. Photo by Sarah Lancaster, K-State Research and Extension.

The ligule is a fringe of hairs with no auricles (Figure 2). The leaf sheath is loose, purple-tinged, and hairless.

Figure 2. The ligule is a fringe of hairs. Also, note the prominent white midrib. Photo by Sarah Lancaster, K-State Research and Extension.

Fall panicum stems are round and smooth, typically up to four feet tall, but can reach up to seven feet tall. Fall panicum can root from the nodes and stems often have a bend at the nodes, giving the plant a somewhat zigzag appearance.

Mature leaves of fall panicum have a conspicuous white midvein and are 4 to 35 inches long and up

to 1 inch wide. They may have hairs near the tip and/or base but are generally hairless. Plants of both species.

The seedhead is an open panicle 3 to 16 inches long (Figure 3). Panicles of fall panicum can form at the top of the stem, at the ends of branches, and even at the base of a leaf. When mature, a single plant can produce up to 500,000 football-shaped yellow seeds with a purple tint.

Figure 3. Note the open panicle at the top of the plant. Photo by Sarah Lancaster, K-State Research and Extension.

Management

Fall panicum is not well controlled by atrazine due to its ability to metabolize the herbicide and is less sensitive to glyphosate than other grasses. However, S-metolachlor (Dual, others) and acetochlor (Harness, others) generally provide suitable control. No herbicide resistance has been reported for

fall panicum in Kansas. However, ALS resistance was recently reported in fall panicum from Wisconsin.

Because fall panicum emerges late, weed growth can be suppressed by practices such as planting corn early, which facilitates a dense crop canopy before weed emergence. Planting winter cereals has also been recommended for fall panicum suppression.

The use of trade names is for clarity to readers and does not imply endorsement of a particular product, nor does exclusion imply non-approval. Always consult the herbicide label for the most current use requirements. Users should read and follow all label instructions.

Sarah Lancaster, Extension Weed Management Specialist
slancaster@ksu.edu

5. 2024 Kansas Wheat Plot Tours - Updated Preliminary Schedule

The Department of Agronomy and K-State Research and Extension will host several winter wheat variety plot tours in different regions of the state starting May 14, 2024. Make plans to attend a plot tour near you to see and learn about the newest available and upcoming wheat varieties, their agronomics, and their disease reactions. Below is a preliminary list of plot tour dates, times, and plot locations/directions. This list will be continuously added to and updated in the coming weeks.

Romulo Lollato, Extension Wheat Specialist
lollato@ksu.edu

Date	Time	County	Location	Directions	Agent/Contact
5/14	6:00 PM	Pawnee	Kinsley	Plot Location: Turn north off HWY-156 onto 345th Ave in Burdett, go north on 345th until it curves west for ½ mile, then turn north on 350th Ave. Stay on 350th Ave for 4 miles to T Road, then ½ West. The plot is on the south side of the road. A meeting and meal will follow the Wheat Tour at Rozel Community Center, located at 105 N Main Street, Rozel, KS 67574	Kyle Grant
5/15	11:00 AM	Barber	Isabel	Plots are located on the SE side of the intersection between SE 120th St. and Main St. in Isabel.	Matt Rhodes
5/15	6:00 PM	Pratt	West of Pratt	0.5 Mile South of Kincheloe's Inc. (Farm Implement Dealer) on the east side of N US Highway 281.	Jenna Fitzsimmons
5/16	8:30 AM	Barton	Galatia	Plots are in the NE corner of the intersection between NW 100th Avenue and NW 180 Rd, 1 mile south of Galatia	Stacy Campbell
5/16	11:00 AM	Kingman	Spivey	Conrardy Seeds Test Plot, 7681 SW 80 Ave, Kingman, KS 67068	Grace Schneider
5/16	5:00 PM	Comanche	Protection	5.5 miles north of Protection on Road 4, west side of the road. Supper will follow the plot tour.	Levi Miller
5/16	6:30 PM	Riley	Riley	SAVE Farm: 9680 North 52nd Street, Riley, KS	Gary Fike
5/17	9:00 AM	McPherson	Marquette	PATRICK PLOT - Marquette. Marquette Rd & Highway 4	Shad Marston
5/17	11:30 AM	McPherson	Moundridge	GALLE PLOT - Moundridge. 1/4 North of Cheyenne Road & 23rd Avenue	Shad Marston

				A free lunch sponsored by MKC will be held at MKC Learning Center, 221 W Hirschler Str., Moundridge.	
5/17	3:00 PM	McPherson	Inman	SCHROEDER PLOT - Inman. Between 4th & 5th Avenue on Cheyenne Road	Shad Marston
5/20	12:00 PM	Harvey	Camp Hawk	Lunch at noon at Camp Hawk. Plot following lunch. From Camp Hawk, go 1.5 miles east to S West Rd, a mile south to 48th St., and turn west and go about 400 yards. The plot is on the south side of the road.	Ryan Flamming
5/20	6:00 PM	Sumner	Belle Plaine	Belle Plaine- 1/2 south of 90th N and N Woodlawn, or 1 mile east of Belle Plaine and ½ south	Randy Hein
5/21	8:00 AM	Sedgwick	Andale	1/2 mile south of intersection 247th St W & 21st St N	Jeff Seiler
5/21	11:00 AM	Sedgwick	Haysville	1901 E 95th St S, Haysville, KS 67060 (John C. Pair Center)	Jeff Seiler
5/21	6:00 PM	Sumner	Caldwell	Caldwell - approximately 2 miles east of Caldwell and ¾ south. or ¾ south of Hwy 81 and S Sumner rd.	Randy Hein
5/22	TBD			TBD	Sandra Wick
5/22	TBD			TBD	Sandra Wick
5/22	TBD			TBD	Sandra Wick
5/22	TBD			TBD	Sandra Wick
5/23	8:00 AM	Phillips	Phillipsburg	From the HWY 36 and East 300 Road Intersection, travel South 1 ½ miles on East 300 Road. Plot is located on the West side of the road.	Cody Miller
5/23	5:00 PM	Ellis	Hays	Plots located SW of Hays, on Golf Course road and Yocemento intersection, go 1.5 miles south, plots are on the west side of the road.	Stacy Campbell
5/23	6:00 PM	Sumner	Conway Springs	Across the road from 922 West 140th Ave North, Conway Springs Ks	Randy Hein
5/24	7:30 AM	Russell	Russell	East of the intersection at E Lucas St & S Front St Russell, KS 67665	Craig Dinkel
5/24	11:30 AM	Ellsworth	Lorraine	1 1/2 miles west of Lorraine on Ave V on the south side of the road	Craig Dinkel
5/24	8:00 AM	Ottawa	Minneapolis	From K106 highway south of Minneapolis to west on Justice Road, 1.5 miles.	Jay Wisbey
5/24	11:00 AM	Saline	Solomon	From Old 40 Highway West of Solomon, go South on N Gypsum Valley Road 2.5 Miles and then West ½ mile on E Stimmel Road	Jay Wisbey
5/28	5:00 PM	Finney	Garden City	Southwest Research and Extension	Logan Simon

				Center in Garden City	
5/28	6:00 PM	Kiowa	Mullinville	Junction of State Hwy 54 and 11th Ave (east edge of Mullinville), south 2 miles, intersection of 11th Ave and M street.	Gary Jorgensen (Alliance Ag & Grain) / Mandy Hensen
5/29	9:30 AM	Rush	LaCrosse	8 ½ miles straight west of the Casey's located in LaCrosse on Hwy 4. Do not curve north to Hargrave. At 7 miles, continue straight west off of the curve. The plot is south side of the road.	Lacey Noterman
5/29	2:00 PM	Ness	Ness City	17282 T Road. From Ness City, go North on Hwy 283 for 4 miles, then turn east on Rd. 170 for 1 mile, and then turn north on Rd. T. Plot is located north of the scale house on the Nichephor farm.	Lacey Noterman
5/29	6:00 PM	Lane	Dighton	7 miles west of Dighton to Eagle Rd, 2 miles south to West Rd 130, then 200 yards west toward Ehmke farmstead, east of the scale.	Lacey Noterman