Issue 959

K-STATE Research and Extension

Extension Agronomy

eUpdate

06/01/2023

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.

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1. Considerations when harvesting short wheat

In many areas of Kansas, prolonged drought has resulted in short wheat and thin stands (Figure 1). Harvesting wheat in these situations can be a challenge. Special attention needs to be given to cutting height, machine adjustments, and operator control. In short wheat, getting the heads into the combine with less straw will be a challenge. In some cases, the reel may not be able to effectively convey the wheat back from the cutter bar to the auger, nor hold it in place during cutting. Short-cutting will also mean more contact potential with the ground and reduced levels of surface residue which will likely negatively impact moisture storage.

Figure 1. Typical wheat height and stand density in drought-affected areas of Kansas during the 2022-23 winter wheat growing season. Photo by Romulo Lollato, K-State Research and Extension.

In the case of material conveyance, stripper headers, air reels, and draper headers may be a great help.

Stripper headers

Stripper headers allow the grain to be harvested efficiently while leaving the maximum amount of

standing residue in the field. Research has shown that this preservation of wheat residue can reduce evaporative losses of water after harvest, aid in the moisture retention of snow, and improve the yields of the next year's crop.

To properly use a stripper header, note the following:

- Operators need to be aware of the stripping rotor height and the relative position of the hood to the rotor. This position needs to be set correctly so that heads approach the rotor at the proper angle for stripping.
- Keep the nose of the hood orientated so that the top of the wheat heads are even with, or slightly below, the forward point of the nose. This may require operating the header with the nose in a slightly lower-than-normal position relative to the rotor. However, it's important to note that running a stripper header lower than necessary will result in increased power consumption and accelerated finger wear.
- Combine ground speeds should be kept high (above 4 mph) to maintain collection efficiency and minimize header losses.
- Several people have reported that adjusting header height with a stripper header is not as critical as it is with a conventional header and that a stripper header could easily be run by non-experienced people (see step 1).
- Continue to adjust stripping rotor speed throughout the day as conditions change. If rotor speeds are too high, that will result in the detachment of the entire head and unnecessary increases in power requirements. Rotor speeds that are too slow will result in unstripped grain remaining in the head. Rotor speeds will generally be lower in thin short wheat than in better stands.

Air reels

Air reels will also aid in the material conveyance from the cutter bar to the auger in reel-type units when crops are light or thin. These units are made in several different types including finger air reels, non-reel, and units that fit over existing reels. Examples of manufacturers are Crary (West Fargo, ND) and AWS (Mitchell, Ontario Canada). Non-reeled units have the advantage of less eye strain from the continuously rotating header reel, but all units have collection efficiencies compared to conventional reels even in sparse or short crops. These units do not control the amount of wheat stubble left in the field and the operator still has to control the cutting height. In short wheat this may mean little to no field stubble will be left for next season's moisture collection and for these reasons stripper headers may be a better choice for certain areas of Kansas.

Draper headers and flex heads

Draper headers may help with the conveyance of material since they have a very short distance between the cutterbar and the conveyance belt. The ability to tip the cutterbar completely back will aid in keeping harvested crop material moving across the cutter bar and onto the belt as well as ensuring some stubble remains standing on the soil surface. Cleats on the belt need to be in good to new condition to maximize the conveyance of crop material away from the cutterbar. Set gauge wheels properly to maximize cutting height and leave standing residue.

Flex heads will also help deal with the lower cutting heights and potential ground strikes. In thin wheat stands, it is even more important that sickles and guards are in good condition as there is less crop material pushing into the cutting area, which would normally help ensure cutting by worn

sickles and guards. On headers with finger reels, it is quite likely that the short-cut wheat will pass in between the fingers rather than being swept backward. Producers may consider adding material over or behind the fingers to act more as a bat to sweep the cutterbar clean. Plastic/vinyl materials or repurposed round baler belting has been successfully used for this purpose.

If harvesting with a draper or flex header, maintain the cutting height as high as possible to preserve standing stubble. Typically, cutting wheat at two-thirds of its full height will result in losses of less than 0.5 percent as any missed heads contain lightweight grain that will be lost as tailings during the harvesting process.

Conventional headers

For many farmers, new equipment may not be an economical choice and you may have to work with a conventional head on your combine. In this case, adjust the reel to get the best movement of the heads from the cutter bar to the auger. Combining in slightly damp conditions may help prevent shatter and decrease losses. If wheat heads have flipped out of the header from the top of the auger, an extra "auger stripper bar" may be necessary. A small strip of angle iron can be bolted slightly behind and below the auger to help with material conveyance. In thin wheat stands it is even more important that sickles and guards are in good condition as there is not as much crop material to push into the cutting area and ensure cutting by worn sickles and guards.

If harvesting with a conventional header, maintain the cutting height as high as possible to preserve standing stubble. Typically, cutting wheat at two-thirds of its full height will result in losses of less than 0.5 percent as any missed heads contain lightweight grain that will be lost as tailings during the harvesting process.

Combine adjustments

In addition to material conveyance and cutting height, lower yields and uneven crop flow may also require performing combine adjustments to the concave/rotor cage clearance, cylinder/rotor speed, and fan speed. Follow the manufacturer's recommendations. The leading cause of grain damage under almost any harvesting condition is an overly fast cylinder or rotor speed. This will especially be evident in harvesting short wheat as there will be less material in the concave or rotor cage to thresh against, increasing the likelihood of grain damage if cylinder/rotor speed is too high.

On conventional machines, it may be necessary to reduce the concave clearance to attain good separation. On rotary combines, it may be advantageous to maintain a typical clearance to provide a more normal threshing condition while using less threshing area. The use of blanking plates on the rotor cage may improve separation. Fan speeds may need to be reduced slightly in order to minimize grain losses. Once adjusted properly, try to keep material crop flow as constant as possible as most threshing and cleaning units work best under these constant flow conditions. As the amount of material passing through the combine decreases the response to various settings such as cylinder/rotor speed, concave/rotor cage clearance, and fan speed will be more sensitive than under more normal operating conditions.

Performing kill-stops during harvest will be especially critical in evaluating grain losses and identifying which stage of the harvesting process is the source. After performing a kill-stop the operator should look at shattered grain losses before the header, losses after the header and before the spread pattern of the combine, and losses in the tailings behind the combine. Losses can be

quickly checked by looking at the number of seeds in the tailings and elsewhere around the combine.

Typically, 20 seeds per square foot is equal to 1 bushel per acre for a sampling area equal to the cutting width of the combine. For the tailings area, where the material is concentrated, multiply the 20 seeds per square foot by the header-to-tailings width ratio. For example, a combine with a 7-foot spreader width and 28-foot header would have a factor of 4 (28 divided by 7), and 80 seeds per square foot (20 x 4) would be the correct number for a bushel-per-acre loss. Also, a normal shoe length is typically one foot, so estimated measurements can be done with your foot. Individual field and header losses are determined by looking at areas before and under the combine. Actual combine threshing losses are determined by subtracting these numbers from the tailing loss.

Summary

Although this will be a rough wheat harvest for many farmers, some changes can be made to help maximize harvest efficiencies. If you have ever wanted to try an alternate header (stripper, flex-draper, etc.), this may be the year for you. For those not wanting to buy, renting may also be a viable option.

Producers in dryland production systems need to keep in mind that in very low-yielding wheat years, anything that can be done to preserve what little crop residue is present will have a large impact on evaporative losses and the productivity of the next crop.

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2. Early summer control of sericea lespedeza using herbicides

Sericea lespedeza is a major invasive species of concern on rangeland, pasture, and some CRP acres in Kansas. This Category C noxious weed infests over 465,000 acres in Kansas (Figure 1). Category C noxious weeds are those that are well-established and known to exist in large or extensive populations. Control efforts should be directed at reducing or eliminating new infestations as well as using approved control methods on established populations.

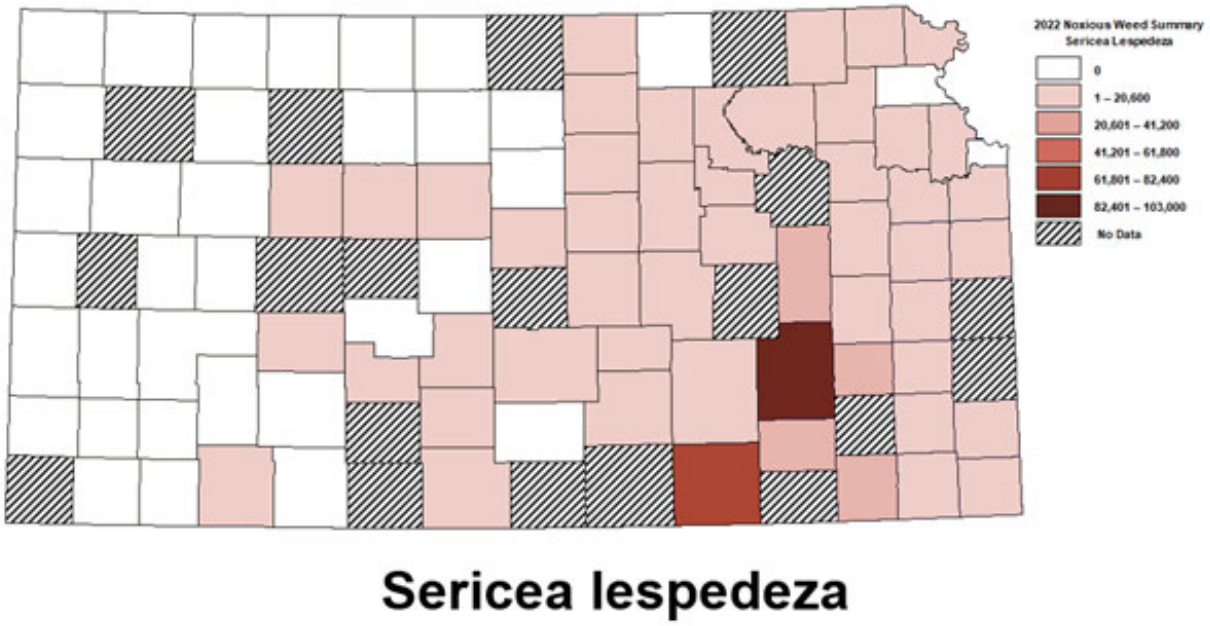

Figure 1. Distribution of sericea lespedeza in Kansas. Source: Kansas Noxious Weed Survey

Sericea lespedeza is a perennial legume with trifoliate leaves. The leaves are club or wedged-shaped (Figure 2). Plants are usually about 3 feet tall but can grow to several feet under ideal conditions. Plants will start to bloom in August with white to cream-colored flowers with a purple throat. The most seed production occurs in September.

Figure 2. Trifoliate, wedge-shaped leaflets of sericea lespedeza. Photo by Walt Fick, K-State Research and Extension.

Prescribed burning stimulates the germination of sericea lespedeza seed. June is a good time to control new seedlings and established sericea lespedeza plants using herbicides. At this time, sericea lespedeza is in a vegetative growth stage (Figure 3) and is rapidly growing. By the end of June, plants will begin to branch and become woodier.

Figure 3. Vegetative growth stage of sericea lespedeza. Photo by Walt Fick, K-State Research and Extension.

Chemical control options

The most effective herbicides to treat sericea lespedeza during the vegetative growth stage are Remedy Ultra (triclopyr) and PastureGard HL (triclopyr + fluroxypyr). Broadcast applications of Remedy Ultra at 1 to 2 pints/acre and PastureGard HL at 0.75 to 1.5 pints/acre should be applied in spray volumes of 10 to 20 gallons/acre. Another herbicide option would be Surmount (picloram + fluroxypyr) at 2 pint/acre. Surmount is a restricted-use pesticide and would be a good choice if you want to treat roughleaf dogwood or blackberry simultaneously. Once sericea starts to branch, metsulfuron-containing herbicides such as Escort XP (0.5 to 1 oz/acre) can be effective.

For spot application, mix 0.5 fl oz PastureGard HL per gallon of water or use a 1% solution of Remedy Ultra in water. Aerial applications of these products should be done with a minimum spray volume of 3 gallons per acre. Higher volumes, e.g. 5 gallons per acre, will generally be more effective.

There are no grazing and haying restrictions for livestock and lactating grazing animals following use of Remedy Ultra and PastureGard HL. There is a 14-day waiting period prior to hay harvest using these two herbicides. If Surmount is used, there is no waiting period before grazing all livestock, except for lactating dairy animals (14 days before grazing). Surmount also requires a 14-day waiting period prior to hay harvest. There are no grazing or haying restrictions following the application of Escort XP.

As a noxious weed in Kansas, sericea lespedeza needs to be controlled. Sericea lespedeza has a tremendous seed bank that helps reestablish stands.

Herbicide treatments will need to be repeated every 2 to 4 years to keep this invasive species in check. Initial treatments should reduce dense stands to the point where spot treatment can be used in future years. Left untreated, sericea lespedeza will dominate a site, greatly reducing forage production and species diversity.

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3. World of Weeds - Horsetails

Extension Weed Science Specialist, Sarah Lancaster, recently received a photo of an unknown weed that is nearly impossible to control with herbicides (Figure 1). The weed is an *Equisetum* species, also known as horsetails. Two Equisetum species in Kansas are field horsetail (*E. arvense*) and scouring rush (*E. hyemale*). These are prehistoric plants that can be found in the fossil record before dinosaurs. So, it's not surprising that they are pretty resilient!

Figure 1. Photo of an Equisetum **species (likely scouring rush) submitted for identification.**

Ecology

Horsetails are generally found in moist soils, such as those found in forests, ditches, or the margins of water bodies. It can grow in either sunny or shaded sites. They contain high concentrations of silica, which made them useful to Native Americans for polishing or scouring. Scouring rush was also used as a drinking straw. Because of the chemical composition, stems typically stand for more than one year. Horsetails have a neurotoxin that can harm livestock, but animals will rarely graze them unless harvested as hay or during winter.

Identification

Horsetails have upright, round, evergreen stems that emerge from rhizomes to form dense stands. Tubers are also found in the field horsetail's root system and sometimes on scouring rush. Stems can be from 7 inches to over 6.5 feet tall with vertical ridges (silica deposits). Dark, toothed bands form at the nodes. The stems of both horsetail species are hollow, with a larger cavity (about ¾ of the stem diameter) in scouring rush. Field horsetail has two types of stems. Sterile stems have whorled branches, while fertile stems have neither branches nor chlorophyll (Figure 2).

Figure 2. Left: Whorled stems and stem sheaths of field horsetail. Image by Robert Videki, Bugwood.org. Right: Fertile stems of field horsetail, lacking chlorophyll with cones at the ends of the stems. Image by Gil Wojciech, Bugweed.org.

There is only one form of the stem in scouring rush, and it does not have branches. The leaves of horsetails are reduced to inconspicuous scales at each node. Horsetails reproduce by spores that develop in cones at the top of the stems. Field horsetail cones are 0.1 to 1.5 inches long while scouring rush cones are 0.1 to 1 inch long.

Management

There is little research on the control of horsetail species. An old article from the Canada Department of Agriculture suggests that 4 ounces of 2,4-D or MCPA ester applied after all field horsetail stems have emerged will kill topgrowth and reduce the number of plants present the following year by 50 to 60%. In more recent research from New Zealand, treatments that included imazapyr (Pursuit), picloram (Tordon), or metsulfuron resulted in 100% control of potted field horsetail 6 months after application. However, control was unacceptable by 1 year after treatment. Even more recently, researchers in Canada reported that the best options for control in corn were treatments that include flumetsulam (Python) and MCPA.

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.

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4. 2023 Wheat Plot Tours - Updated for June 1 through June 9

The Department of Agronomy and K-State Research and Extension is hosting several winter wheat variety plot tours in different regions of the state. 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. A preliminary list of plot tour dates, time, and directions was published in a previous eUpdate. This article contains the updated details for June 1 through June 9 plot tours.

Romulo Lollato, Extension Wheat Specialist
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Date	Time	County	Location	Directions	Agent/Contact
6/1	8:00 AM	Republic	Belleville	2 miles west of Belleville on Hwy 36 at K-State North Central Experiment Field	Luke Byers
6/1	10:00 AM	Republic	Belleville	Polansky Seed East Location (1.5 mi. E of Belleville on Hwy. 36)	Luke Byers
6/1	6:00 PM	Ellis	Hays	Golf Course Rd. & 180th Ave. at intersection go 1.5 miles S. on 180th Rd	Stacy Campbell
6/2	CANCELED	Republic	Belleville	CANCELED - 2023 In-Depth Wheat Diagnostic School (CEU/CCA credits, full day program).	Romulo Lollato
6/6	9:00 AM	Thomas	Levant	9 miles south of the Levant I-70 interchange on the east side of the blacktop road.	Emily Bennigsdorf
6/6	5:45 PM	Sherman	Goodland	9 miles north of Goodland on Hwy 27 to Rd 73 Plot is north of the trees	Jeanne Falk Jones
6/7	5:45 PM	Cheyenne	St. Francis	From St. Francis on Hwy 36, go 14 miles west to Road 1 & north 2.75 miles	Jeanne Falk Jones
6/7	7:30 AM MT	Wallace	Sharon Springs	9 mi south of Sharon Springs on Hwy 25 to Field Road, 4 mi east to Road 22 and 3/8 mi south (breakfast at 7:00 am)	Jeanne Falk Jones
6/7	10:00 AM MT	Wallace	Weskan	3 mi west of Weskan on Hwy 40 to Road 3 and south 6.25 mi to Field Road	Jeanne Falk Jones
6/8	5:00 PM	Washington	Palmer	Ohlde Seed Farms (3 mi. E of Palmer on 4th Rd)	Luke Byers

6/9	7:00 AM	Dickinson	Abilene	Intersection of HWYs 15 and 18 North of Abilene.	Rickey Roberts

5. Wheat Disease Field Day in Manhattan - June 5, 2023

The Department of Plant Pathology and K-State Research and Extension will be hosting a wheat disease field day on Monday, June 5 at the Rocky Ford Plant Pathology Farm just north of Manhattan (1700 Barnes Rd., Manhattan).

This will be a great opportunity to see several wheat diseases in the field and to learn about the latest K-State wheat disease management and breeding advances.

Topics that will be covered include:

- Wheat disease management research updates
- Breeding efforts for Fusarium head blight, stem rust, barley yellow dwarf virus, and tan spot
- Pre-breeding efforts using WGRC collection of wheat wild relatives
- Predictive models for forecasting wheat diseases
- Wheat disease diagnostics and updates from the K-State Disease Diagnostic Lab

Registration will begin at 8:00 am and the program will begin at 8:30 am. Lunch will be served at noon.

There is no cost to attend this field day. Registration is requested for meal planning purposes. Please use this link for registration: https://shorturl.at/goKT1. You can also contact Amy Geyer at ageyer@ksu.edu or 785-532-6176.

K-State Plant Pathology

Wheat Disease Field Day

Monday, June 5th 2023
8:00 AM – 1:00 PM
K-State Rocky Ford Plant Pathology Research Farm

Address: 1700 Barnes Road, Manhattan, KS 66502
*South side of the road

Registration 8:00-8:30
Lunch 12:00 – 1:00 pm

Speaker lineup:


Kelsey Onofre
Wheat Extension Pathologist


Jessica Rupp
Applied Wheat Pathologist


Erick De Wolf
Wheat Pathologist


Eduard Akhunov
Wheat Geneticist


Allan Fritz
Wheat Breeder


Robert Bowden
USDA Plant Pathologist


Mary Guttieri
USDA Research Geneticist


Chandler Day
Diagnostician

Topics:

Come visit the K-State Plant Pathology Farm and hear about the latest updates in wheat disease management and breeding for disease resistance from K-State, with topics including:

- Wheat disease management research updates
- Breeding efforts for Fusarium head blight, stem rust, barley yellow dwarf virus, and tan spot
- Pre-breeding efforts using WGRC collection of wheat wild relatives
- Predictive models for forecasting wheat diseases
- Wheat disease diagnostics and updates from the diagnostic lab

Registration not required, but requested to ensure we have enough food for lunch. To register scan the QR code or fill out this survey: https://shorturl.at/goKT1. You can also email (ageyer@ksu.edu) or call (785-532-6176) Amy Geyer.

Register:

KANSAS STATE UNIVERSITY
Department of Plant Pathology