



K-STATE
Research and Extension

Extension Agronomy

eUpdate

02/02/2018

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy e-Update 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 Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Topdressing wheat with nitrogen: Timing, application methods, source, and rates

Now is a good time for producers to start planning topdress nitrogen (N) applications to winter wheat. Given the dry conditions in a large part of the state and some fairly small wheat in many fields due to delayed fall planting, there are some key elements to consider when deciding on the exact N fertilizer program for your crop. These include: timing, N source, application method and N rate.

Ideally, the N in topdress applications will be moved into the root zone with precipitation well before jointing begins in order to be most efficiently utilized by wheat. With some of the small wheat out there with limited fall tillers, having adequate N available to support spring tillering when it breaks dormancy will be important. Also, the potential number of meshes per head is determined after spring green-up and prior to jointing; thus, having available N in the root zone can help ensure good yield potential. Some combination of fall preplant or at-seeding N, and/or early topdressed N, is also normally needed to supply adequate N to support head differentiation. The following will discuss some of the issues to consider when making topdressing decisions.

Timing of N application

The most important factor in getting a good return on topdress N is usually timing. It is critical to get the N on early enough to have the maximum potential impact on yield. While waiting until spring, just prior to jointing, can be done with success, this can be too late in some years, especially when little or no N was applied in the fall. For the well-drained, medium- to fine-textured soils that dominate our wheat acres, the odds of losing much of the N that is topdress-applied in the winter is low since we typically don't get enough precipitation over the winter to cause significant denitrification or leaching. For these soils, topdressing can begin anytime, and usually the earlier the better.

For wheat grown on sandier soils, earlier is not necessarily better for N applications. On these soils, there is a greater chance that N applied in the fall or early winter could leach completely out of the root zone if precipitation is unusually heavy during the winter. Waiting until closer to spring green-up to make topdress N applications on sandier soils will help manage this risk.

On poorly drained and/or shallow claypan soils, especially in south central or southeast Kansas, N applied in the fall or early winter would have a significant risk of denitrification N loss. Waiting until closer to spring green-up to make topdress N applications on these soils will help minimize the potential for this type of N loss.

Also keep in mind that N should not be applied to the soil surface when the ground is deeply frozen and especially when snow covered. This will help prevent runoff losses with snow melt or heavy precipitation.

Split applications

On both sandy soils subject to leaching and poorly drained soils prone to denitrification, split applications may be a strategy to consider. This would involve applying enough N in the fall at or prior to planting to give good support for fall growth and tillering -- generally 20-30 pounds of N. Follow up with an additional application of about 20-30 pounds of N in late winter or early spring to

support spring tillering, possibly applied with herbicides. This late-winter/early-spring application becomes especially important when stands are thin due to poor emergence, as many fields are this year. Finally, come back around jointing or a few days later with a final application to support heading and grain fill. This strategy can also provide flexibility for in a year like this with uncertainty due to dry conditions and poor fall growth allowing to hold back part of the N for later in the spring as we have a better idea of soil moisture and weather conditions for the season.

Application method

Most topdressing is broadcast applied. In high-residue situations, this can result in some immobilization of N, especially where liquid urea ammonium nitrate (UAN) is used. If no herbicides are applied with the N, producers can get some benefit from applying the N in a dribble band on 15- to 18-inch centers. This can minimize immobilization and may provide for a more consistent crop response.



Figure 1. Streamer bars used for topdressing wheat in a surface band. Photo by Ray Asebedo, K-State Research and Extension.

Nitrogen source

The typical sources of N used for topdressing wheat are UAN solution and dry urea. Numerous trials by K-State over the years have shown that both are equally effective. In no-till situations, there may

be a slight advantage to applying dry urea since some of it will fall to the soil surface and be less affected by immobilization than broadcast liquid UAN, which tends to get hung up on surface residues.



Figure 2. Urea broadcast to tillering wheat in a topdress application. Photo by Romulo Lollato, K-State Research and Extension.

Dribble (surface band) UAN applications would also avoid some of this tie-up on surface crop residues as well. But if producers plan to tank-mix with an herbicide, they'll have to use liquid UAN and broadcast it.

Controlled-release products such as polyurethane coated urea (ESN) might be considered on very sandy soils prone to leaching, or poorly drained soils prone to denitrification. Generally a 50:50 blend of standard urea and the coated urea will provide some N immediately to support tillering and head development, and also continue to release some N in later stages of development. This would work best in settings with high loss potential.

Nitrogen rate

Producers should have started the season with a certain N recommendation in hand, ideally based

on a profile N soil test done before the crop is planted and before any N has been applied. If a soil sample was taken at sowing, profile nitrate-N can help determine the rate to be applied based on the yield goal. K-State recommends 2.4 lbs of N per bushel per acre of yield goal, from which credits for profile N, previous crop, tillage system, and organic matter are provided. However, it is not too late to use the profile N soil test if taken in late winter/very early spring before the wheat greens up. While it won't be as accurate as when sampled in the fall, it can still point out fields or areas in fields with high levels of available nitrate N. Unfortunately it is not reliable in measuring recently applied N. So if a high rate of N has already been applied, a late winter profile sample probably shouldn't be taken. Remember that topdressing should complement or supplement the N applied in the fall and the residual soil N present in the soil. The total N application, planting and topdressing, should equal the target recommended rate.

If the wheat was grazed this fall and winter, producers should add an additional 30-40 lbs N per acre for every 100 lbs of beef weight gain removed from the field. If conditions are favorable for heavy fall and/or spring grazing, additional N maybe necessary, especially for a grain crop.

Low grain prices and dry conditions this year may also play a role for N rate decisions this spring. However, it is important to keep in mind that N is the most limiting nutrient for wheat, and the optimum agronomic N application rate will likely result in economic returns. In general, producers may consider a later topdress application (around jointing) with a better idea of the overall crop condition and expectations for the rest of the season; rather than cutting back on N rates now and potentially limiting yields even further.

Some fields may also benefit from an application of sulfur and chloride. Like N, these nutrients are mobile in the soil, and a topdress application before jointing is considered an effective application time. Sulfur and chloride topdress applications should be made based on soil test and history of response. More information on topdressing with sulfur and chloride can be found in an upcoming eUpdate issue.

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2. Updated for 2018 - Kansas Corn Management publication

A newly revised K-State Research and Extension publication, *Kansas Corn Management 2018*, is now available and can be accessed online at: <https://www.bookstore.ksre.ksu.edu/pubs/MF3208.pdf>

K-STATE
Research and Extension

Kansas Corn Management 2018

MF3208

Crop Production

This publication offers advice to producers, crop consultants, and agronomists to manage Kansas corn crops as efficiently and profitably as possible. The recommendations provide guidelines and must be tailored to each producer's cropping conditions.

This comprehensive guide is written specifically for Kansas and includes valuable, up-to-date information on:

- Planting practices
- Plant density and yield interactions
- Rate of dry down in corn before harvest
- Weed management
- Nutrient management
- Diseases
- Insect management
- Risk management and corn markets
- Machinery
- Irrigation

Contributors to the 2018 version of this publication include:

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3. 2017 Kansas Performance Tests with Corn Hybrids report now online

The *2017 Kansas Performance Tests with Corn Hybrids* report is now online. In this report, you will find a recap of the 2016-17 corn crop, with a detailed discussion summarizing the statewide growing conditions and impacts from diseases and insects. More importantly, the results of the 2017 corn hybrid performance tests are also shown. Corn performance tests are conducted each year by the Kansas Agricultural Experiment Station.

Producers and crop consultants can use this resource to help select corn hybrids for their operation by checking for varieties that show a consistently good performance in their region.

The online version of the corn hybrid performance test results can be found at:

<https://www.bookstore.ksre.ksu.edu/pubs/SRP1136.pdf>.

4. Learn the difference between fire weather watches and red flag warnings

Winter forecasts often include winter storm or blizzard warnings. Lately, the National Weather Service (NWS) weather forecasts have included a different type of warning: Red Flag Warnings and Fire Weather Watches.

A **Red Flag Warning** is issued for critical fire danger, and signifies that those weather conditions are occurring, or will occur shortly. These critical weather conditions consist of a combination of strong winds, low relative humidity, and warm temperatures – all which make fire suppression very challenging. Thresholds for these warnings vary by your local associated NWS forecast office (see Table 1).

A **Fire Weather Watch** is issued in advance of critical fire danger. These Watches signify the forecasted possibility of critical fire weather occurring in the next 24-48 hours. Some offices issue these more than others. These Watches are meant to provide you advance notice so that you can take proper precautions and/or make better decisions based upon these forecasts.

Table 1. Red Flag thresholds by National Weather Service Forecast Office

Red Flag Warning Thresholds		
Forecast Office	Relative Humidity	Wind Speeds/Gusts
Goodland	15%	Gusts 25 mph or greater
Dodge City	15%	Gusts 25 mph or greater
Hastings, NE	20%	Sustained winds 20mph/gusts 25 mph
Wichita	Extreme Grassland Fire Danger Index	
Topeka	20%	Sustained winds 20mph/gusts 25 mph
Pleasant Hill, MO	25%	Gusts 25 mph or greater
Springfield, MO	25%	Gusts 25 mph or greater

Generally, these weather conditions create an atmosphere with explosive fire growth potential. Any spark has the potential to create a large fire that will resist typical suppression efforts. Use appropriate caution, such as avoiding outdoor burning, watching for hot exhaust systems over grass, and extra care with welding or anything that might create sparks.

Note that these Warnings/Watches only occur when fuels (material that burns such as grass, leaves, cedars, etc.) are able to efficiently carry fire. During the winter, our grasses are dormant and dead. This provides an ample fuel for fire to easily carry. Therefore, most often these alerts occur between the months of October – May (Figure 1), until the spring rains arrive to drive grass growth again. This doesn't mean that the fire weather potential isn't there the remaining months. During periods of drought, grasses can become dormant and carry fire. These particular situations are more difficult to forecast in advance. Reports of fire carrying exceptionally well and being difficult to suppress are critical to the forecast process. If you feel these conditions are occurring, don't hesitate to contact your local office and spread that information.

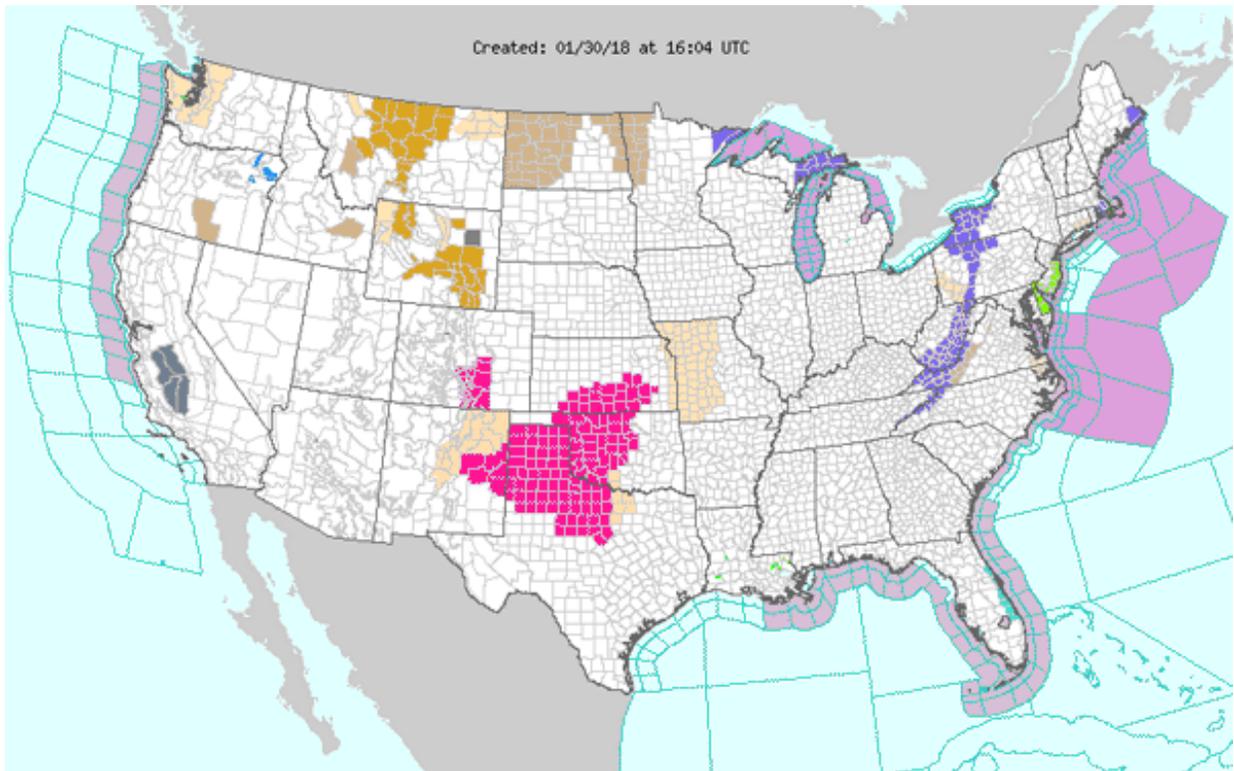


Figure 1. Red flag warnings on January 30, 2018. Source: National Weather Service

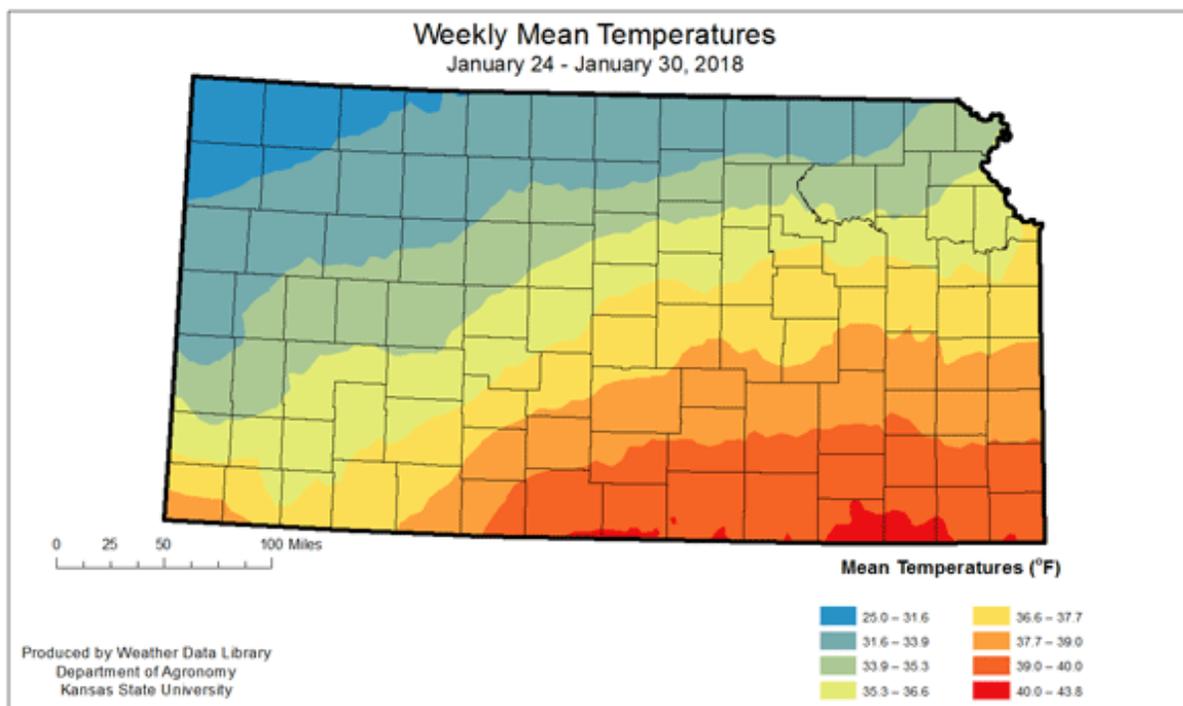
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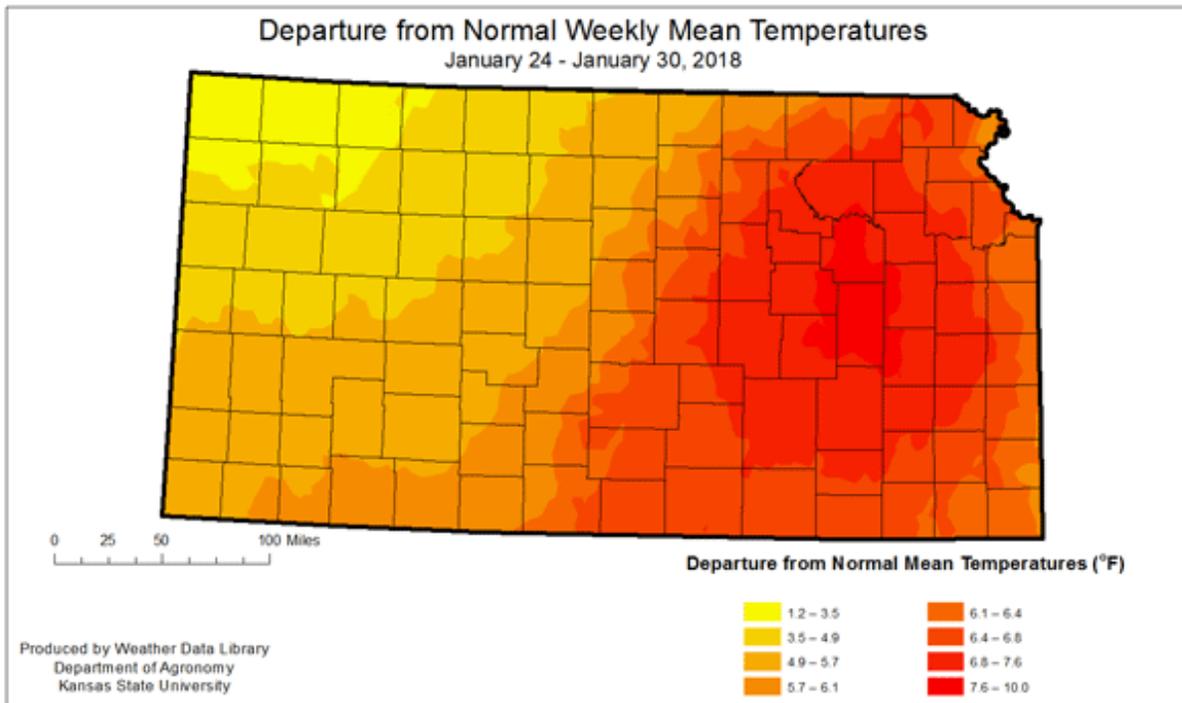
Christopher Redmond, Kansas Mesonet
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Jason Hartman, Kansas Forest Service
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5. Update on the drought conditions in Kansas

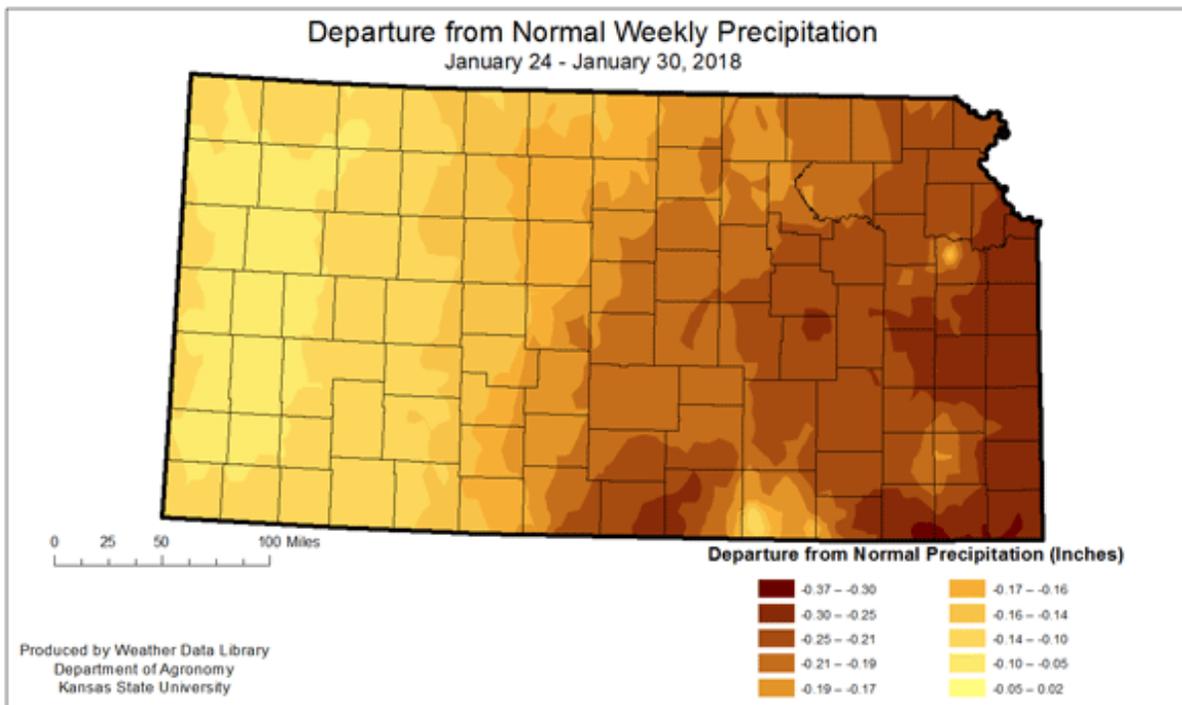
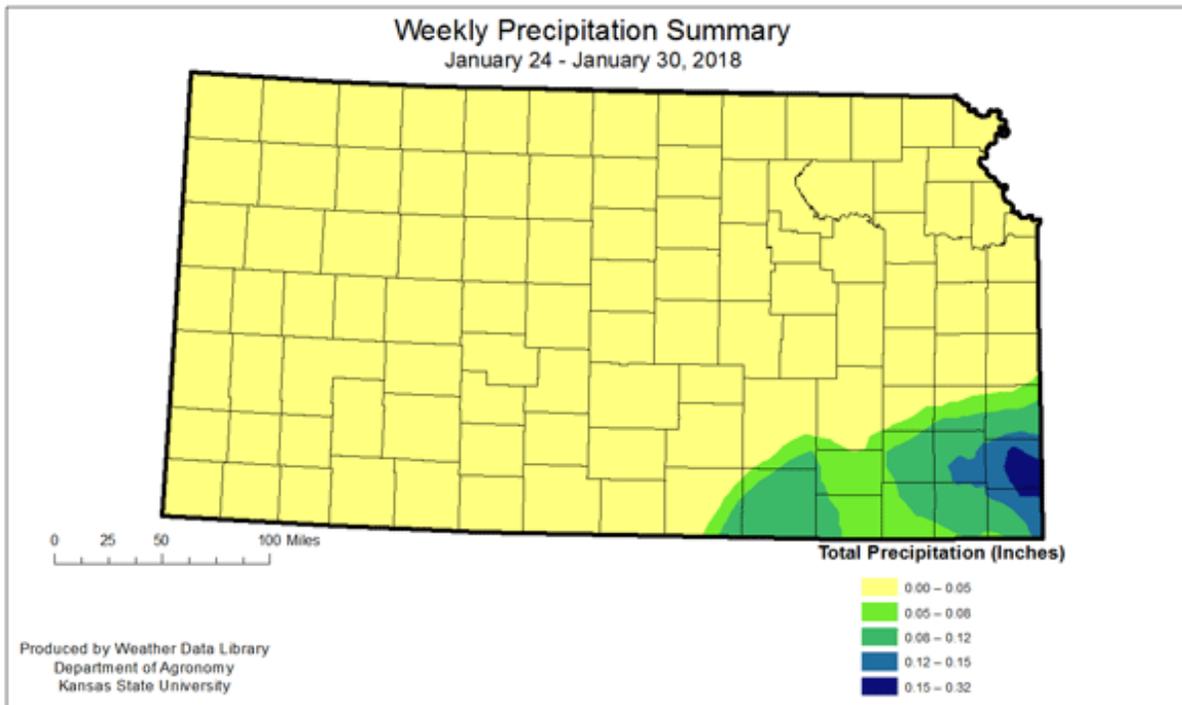
The last week of January in Kansas was mild and dry. Statewide temperatures averaged 35.5 degrees F or 1.7 degrees warmer-than-normal for the period (Jan. 24-30). Temperatures for all divisions averaged above normal. There was a wide swing between the warmest and coldest readings, although not as great as the previous week. The Northwest Division had the least departure from normal with an average of 31.0 degrees F, or 2.2 degrees warmer-than-normal. The East Central Division had the greatest departure from normal with an average of 37.0 degrees F, and a departure of 7.5 degrees warmer-than-normal. The Southeast Division had the warmest average at 39.0 degrees F and a departure of 6.6 degrees. The Southwest Division had the widest swing in temperatures with a range of 61 degrees. The warmest reading in the division was 73 degrees F reported at Hugoton, Stevens County, on the January 30. The coldest reading in the division was 9 degrees F, also at Hugoton, on the 29th.





The only moisture reported during the week was in the Southeastern Division as last week's system exited the state. The state-wide average was 0.01 inches, or two percent of normal. That is 0.18 inches below normal for the period. The Southeast Division averaged 0.06 inches or 20 percent of normal. This division, despite having the greatest average rainfall, also had the greatest departure at 0.25 inches below normal.

The greatest weekly total for the National Weather Service Cooperative Stations was 0.26 inches at Arkansas City in Cowley County. The highest weekly total at a Community Collaborative Rain Hail and Snow network station was 0.24 inches at Pittsburg 0.7 WSW in Crawford County. Only trace amounts of snow were reported for the week.



Drought conditions

With the mild temperatures and lack of precipitation, drought conditions continue to worsen. No portion of the state remains drought-free (Figure 1). The amount of the state in extreme drought expanded slightly to 4.3 percent. Severe drought coverage jumped almost 10 percent to just under 25 percent of the state. Moderate drought expanded to cover 36 percent.

The quantitative precipitation forecast for the next 7-day period, ending on February 8th, calls for less than a quarter of an inch accumulation across most of the state (Figure 3). The 8 to 14-day precipitation outlook is also dry, with an increased chance of below-normal conditions statewide (Figure 2). The temperature outlook is for an increased chance of colder-than-normal conditions for the entire state.

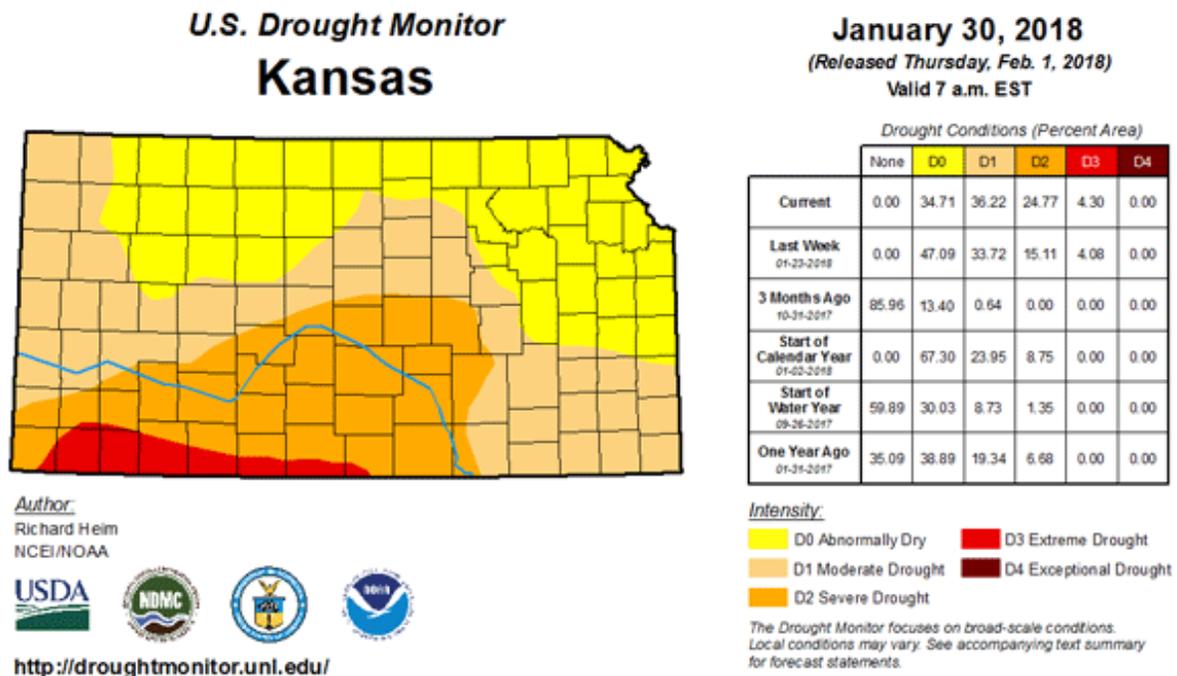


Figure 1. Current drought conditions for Kansas. Source - [Drought monitor](http://droughtmonitor.unl.edu/), University of Nebraska, Lincoln.

The Climate Prediction Center’s 8-14 day outlook shows increased chance of below normal precipitation for the period. Temperatures are expected to be colder-than-normal statewide. Even with less evaporative demand given the cooler temperatures, without significant precipitation, no improvement in the drought conditions can be expected.

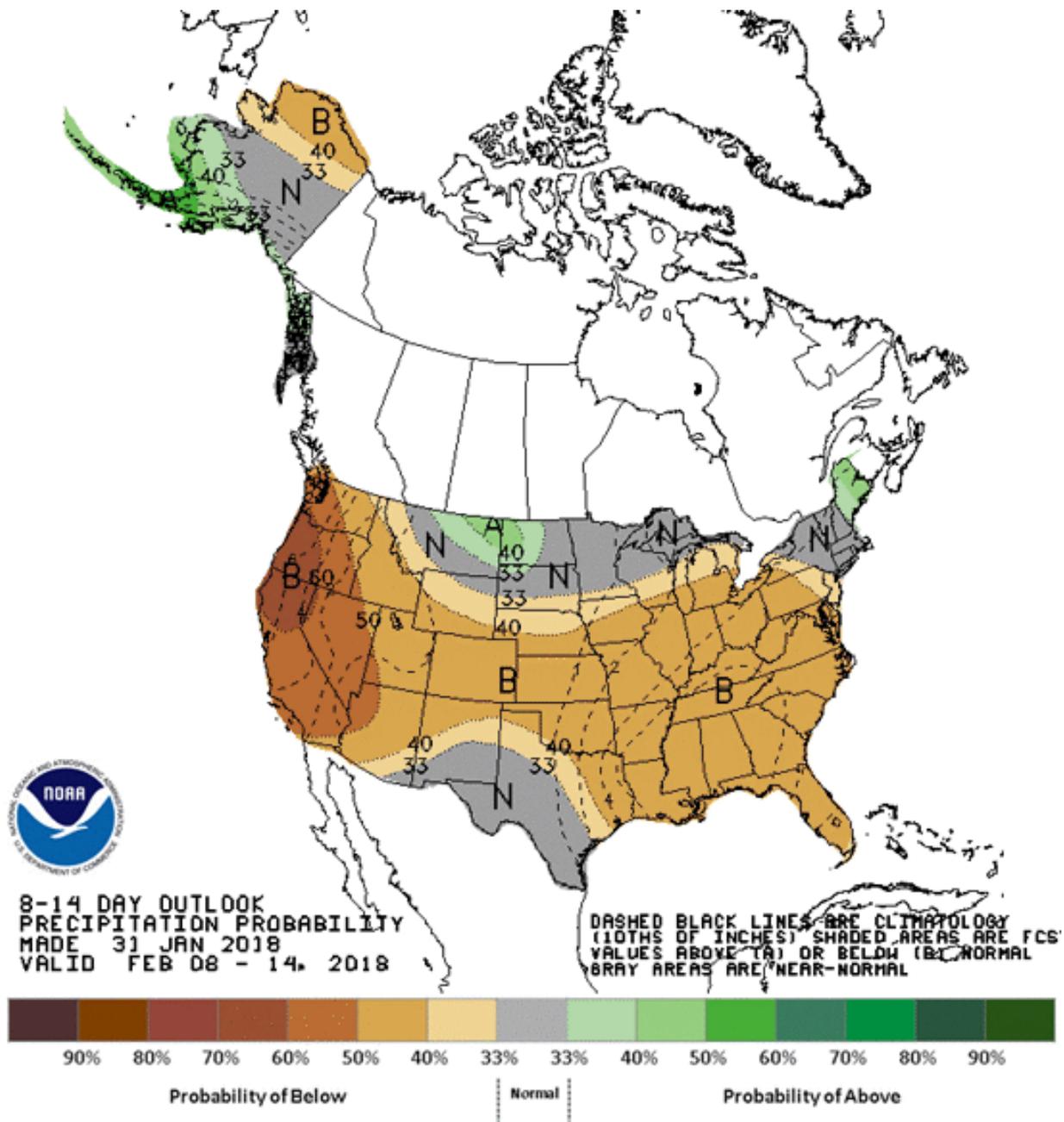


Figure 2. 8-14 day Precipitation Outlook for period ending February 14, 2018. Source: Climate Prediction Center, <http://www.cpc.noaa.gov/>.

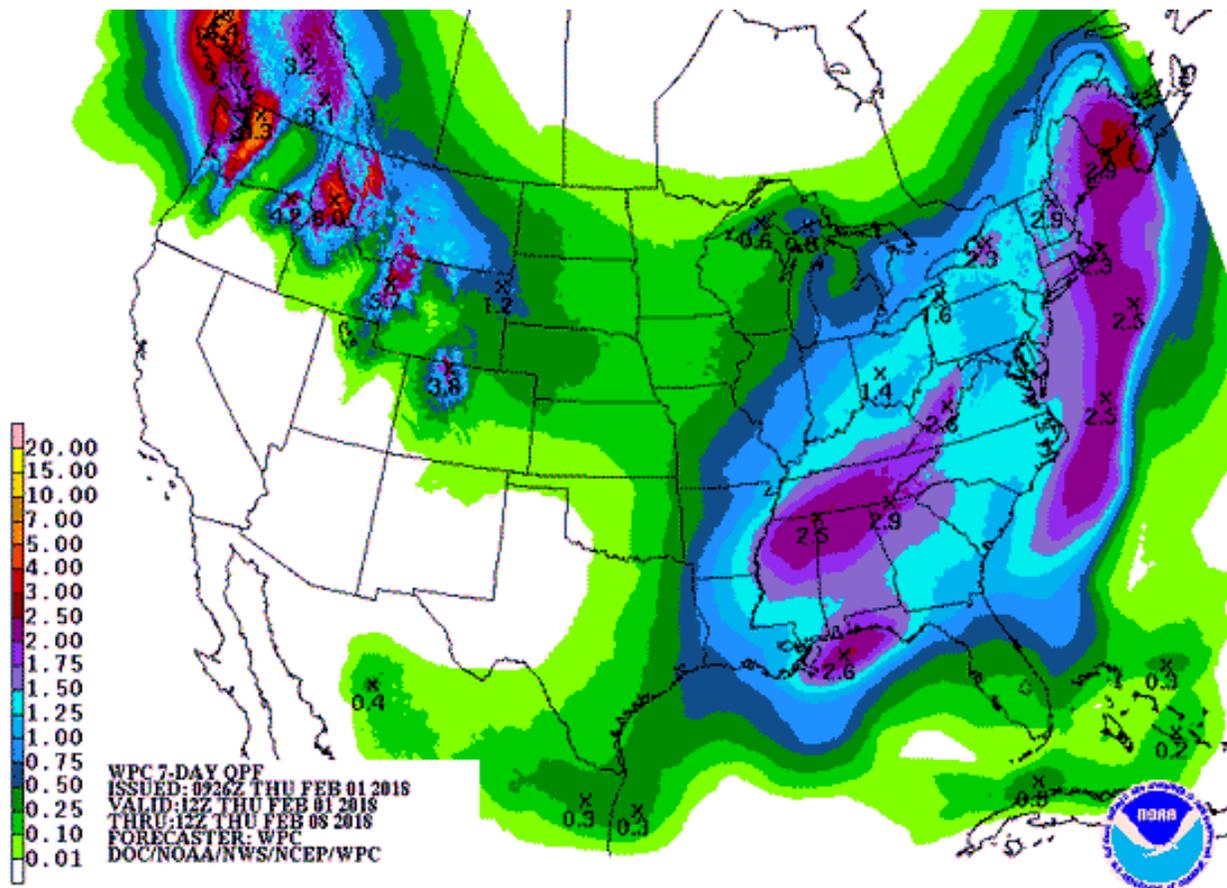


Figure 3. Quantitative Precipitation Forecast for the week ending on February 8, 2018. Source: Climate Prediction Center, <http://www.cpc.noaa.gov/>.

Additional information can be found on the Kansas Climate website under weekly maps at <http://climate.k-state.edu/maps/weekly>.

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6. K-State Soybean School at Phillipsburg rescheduled for March 21

The Soybean School originally scheduled for January 22 in Phillipsburg has been rescheduled for **March 21, 2018**.

The one-day school will cover a number of issues facing soybean growers including: weed control strategies, production practices, nutrient fertility, and insect management.

March 21 – Phillipsburg, KS

Phillips County Fair Building, 1481 US-183
Cody Miller, Phillips-Rooks District, codym@ksu.edu, 785-543-6845

Lunch will be provided courtesy of Kansas Soybean Commission (main sponsor of the schools). The schools will also be supported by Channel Seeds. There is no cost to attend, however participants are asked to pre-register by **March 19**. Please re-submit your registration if you had signed up for the original date.

Online registration is available at: [K-State Soybean Schools](#)

You can also preregister by emailing or calling the local K-State Research and Extension office listed above.



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7. Prescribed Burning workshops scheduled for 2018

Several Prescribed Burning workshops are currently scheduled for the remainder of the winter in Kansas, with the possibility of more upon request. The agencies involved include K-State Research and Extension, USDA-NRCS, USDA-FSA, Department of Wildlife, Parks, and Tourism, National Weather Service, and the Kansas Prescribed Fire Council.

Each workshop lasts about 4-5 hours and includes topics on reasons for burning, regulations, weather considerations, liability, burn contractors, equipment and crew, hazards, fuels, firebreaks, fire types and behavior, ignition techniques, and burn plans.

Contact Walt Fick at 785-532-7223 or whfick@ksu.edu if you would like to host a prescribed burning workshop.

Workshop	Date	Location	Host/Contact	Agency	Phone	e-mail
Stafford Co.	Jan. 23	Hudson	Glenn Newdigger	KPFC	620-549-3502	gnewdigg@ksu.edu
Clay Co.	Feb. 20	Clay Center	Benjamin Hanson	FSA	785-632-3550	ben.hanson@ks.usda.gov
Reno Co.	Feb. 21	South Hutchinson	Jess Crockford	KPFC	620-669-8161	Jess.crockford@ks.usda.gov
Dickinson Co.	Feb. 26	Woodbine	James Coover	KSRE	785-263-2001	jcoover@ksu.edu
Saline Co.	Feb. 28	Salina	Tom Maxwell	KSRE	785-309-5850	tmaxwell@ksu.edu
Rooks Co.	Mar. 8	Stockton	Dorothy Heim	FSA	785-425-6302	dorothy.heim@ks.usda.gov

Walt Fick, Range Management Specialist
whfick@ksu.edu

8. Soil Health Workshop to be held on March 8 in Manhattan

A Riley County Soil Health Workshop will be held on Thursday, March 8, at Pottorf Hall, CiCo Park in Manhattan, Kansas. The workshop will begin at 9:00 a.m. and conclude at 2:00 p.m.

The workshop is hosted by K-State Research and Extension and the Natural Resources Conservation Service. The workshop will discuss and highlight recent cover crop research and how cover crops relate to soil health.

Topics and speakers include:

- *Using cover crops as a tool for weed control*, Anita Dille – Weed Ecology
- *Cover crops and the nitrogen cycle in the rotation*, Peter Tomlinson – Environmental Quality
- *Sorghum response to cover crops in no-till systems*, Kraig Roozeboom, Crop Production
- *Protecting surface water with healthy soils, cover crops, and fertilizer management*, Nathan Nelson, Soil Fertility and Nutrient Management
- *Building better soils with cover crops*, DeAnn Presley – Soil Management
- *Cover crops in a soybean production system*, Doug Shoup – Southeast Area Crops and Soils
- *Covers for use by cattle*, Jaymelynn Farney – Southeast Area Beef Systems

Registration for the workshop is free and lunch will be provided. Participants are asked to register by **Monday, March 5**. Contact the Riley County Conservation District to reserve your spot by calling 785-537-8764 or at Aubrey.evans@ks.nacdnet.net

The event is limited to 200 people, so don't wait too long to register!

9. Register now for the Western Kansas Forage Conference, February 21 in Garden City

Kansas State University Research and Extension and the Kansas Forage and Grassland Council (KSFGC) in collaboration with a number of private forage industry supporters will be hosting the Southwest Kansas Forage Conference on February 21, 2018 at the Southwest Research-Extension Center in Garden City from 9:00 am-3:30 pm. The Southwest Research-Extension Center is located at 4500 E Mary Street, Garden City, KS, 67846.

Topics to be covered include:

- Impact of climate variability on western Kansas agriculture
- Nutritional value of forage sorghum
- Triticale forage production and variety selection
- Trucking and forage transportation rules and regulations
- Getting the most out of your silage
- Silage safety

This conference provides a platform to keep producers up-to-day on new research and technology development in the forage arena. Producers should consider this conference as an opportunity to refresh basic principles and to learn new principles that they can apply to their own situation.

Conference registration is \$25 per individual, and for an additional \$25 a farmer or rancher can support and gain the benefits of becoming a KSFGC member.

Online Conference Registration is available at <https://ksfgc.org/wkfc/>. The registration link can also be found at <http://www.southwest.k-state.edu/>. Advanced registration required by February 9, 2018.

Continuing Education credits have been applied for and should be available.

Please direct any questions to Mark Nelson at info@ksfgc.org

2018 WESTERN KANSAS FORAGE CONFERENCE

FEBRUARY 21, 2018

**SOUTHWEST RESEARCH-
EXTENSION CENTER
4500 E Mary Street,
Garden City, KS 67846
9:00 A.M.—3:30 P.M. (CST)**

Topics to be covered include:

- Impact of climate variability on western Kansas agriculture
- Nutritional value of forage sorghum in silage feed production
- Triticale forage production, variety selection and future outlook
- Dairy Farmers of American Garden City Plant Update
- Trucking Laws
- Getting the most of your silage
- Silage safety

Online Conference Registration: <https://ksfoc.org/wkfc/>

Registration Link also @ <http://www.southwest.k-state.edu/>

Signup to Become Membership Online for an additional \$25.00
@ <https://fom.jotform.com/72816740441960>

Presented by:

K-State Research & Extension

Kansas Forage and Grassland Council

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Kansas State University is committed to making its services, activities and programs accessible to all participants. If you have special requirements due to a physical, visual, or hearing disability, contact AJ Foster, 620-675-6164.
Kansas State University, Agricultural Experiment Station and Cooperative Extension Service
K-State Research and Extension is an equal opportunity provider and employer.



Registration Fee - \$25.00

**For an additional \$25.00
become a KSFGC member
and gain massive benefits.**

**Advanced registration is
required by February 9 2018**

**(CEUs applied for and should be
available at this meeting)**

Kansas State University Department of Agronomy

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10. Don't miss the K-State Sorghum Schools in early February



A series of three K-State Sorghum Production Schools will be offered in early February 2018 to provide in-depth training targeted for sorghum producers and key stakeholders. The schools will be held at three locations around the state.

The one-day schools will cover a number of issues facing sorghum growers: weed control strategies; production practices; nutrient fertility; and insect and disease management.

The dates and locations of the K-State Sorghum Production Schools are:

- **February 6** – Dodge City - Boot Hill Casino Conference Ctr., 4100 W Comanche St

Andrea Burns, Ford County, aburns@ksu.edu, 620-227-4542

- **February 7** – Hutchinson – Hutchinson Community College, 1300 N Plum St

Darren Busick, Reno County, darrenbusick@ksu.edu, 620-662-2371

- **February 8** – Washington – FNB Washington 101 C Street, Box 215

Tyler Husa, River Valley District, thusa@ksu.edu, 785-243-8185

Lunch will be provided courtesy of Kansas Grain Sorghum Commission. There is no cost to attend, but participants are asked to pre-register by January 31.

Online registration is available at: <http://bit.ly/KSSORGHUMSchools>

You can also pre-register by emailing or calling the nearest local K-State Research and Extension office for the location you plan to attend.

More information on the final program for each Sorghum School will be provided in upcoming issues of the Agronomy eUpdate.

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