Issue 764

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eUpdate

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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. Alfalfa management: Deciding on last cutting this fall

Alfalfa will quit growing after the first hard freeze in Kansas which occurs, on average, around October 15, but can be as early as October 1 or late as November 1. The timing of the last two cuttings impacts the winter survival and productivity of the stand in the following year.

The last cutting, prior to fall dormancy, should be made based on expected crown regrowth rather than one-tenth bloom because of the decreasing photoperiod. The last cutting should be made so there will be 8 to 12 inches of foliage, or 4 to 6 weeks of growth time, before the first killing frost. This should allow adequate time for replenishment of root reserves. Which means the second to final cutting should occur around September 1st.

At this stage of the growing season, alfalfa plants need to store enough carbohydrates to survive the winter. If root reserves are not replenished adequately before the first killing freeze in the fall, the stand is more susceptible to winter damage than it would be normally. That could result in slower green-up and early growth next spring, and in some cases stand loss due to winter kill.

The final cutting should occur right after the first killing freeze, before too many of the leaves have dropped. Producers should be prepared to enter the fields as soon as soil moisture conditions allow. After a killing freeze, the remaining forage (if any) can be hayed safely. However, the producer should act quickly because the leaves will soon drop off.

Figure 1. Alfalfa stand with approximately 12 inches of top growth prior to winter dormancy. The last cut in this stand was performed early September, and this photo was taken late October. This stand will be hayed immediately following the first killing frost. Photo by Romulo Lollato, K-State Research and Extension.

Consider soil sampling alfalfa fields now

Late fall is also a great time of the year to soil sample alfalfa ground. This timing allows for an accurate assessment of available soil nutrients and provides enough time to make nutrient management decisions before the crop starts growing in the spring. Key soil tests include pH, phosphorus, and potassium, and to a lesser extent, sulfur and boron. In particular, potassium is highly related to winter survival so it's important to make sure to have optimum range of potassium in soil before entering winter. When sampling for immobile nutrients, sampling depth should be six inches, while mobile nutrients (sulfur) should be sampled to 24 inches.

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2. Recommendations for fall planting of alfalfa

Alfalfa, often considered the "Queen of Forages", produces high yields that are highly digestible and high in protein. Alfalfa is a very important leguminous crop for dairy and other livestock operations in Kansas. Late summer and early fall are often the best times to plant alfalfa in Kansas due to less weed pressure than spring planting (Figure 1).

Figure 1. Alfalfa seedlings. Photo by Doohong Min, K-State Research and Extension.

Much of Kansas has seen above-average rainfall this summer and soil moisture within the profile is adequate, if not surplus, in many areas. Available moisture at planting is crucial for alfalfa establishment, but too much moisture can increase seedling disease incidence and reduce alfalfa nodulation and nitrogen fixation.

If soil moisture is available, growers in northwest Kansas can plant as early as mid-August. Those in

southeast Kansas can plant in mid-to-late September. In other parts of Kansas, the optimal planting time is late August or early September. Producers just need to plant early enough to have three to five trifoliate leaves before the first frost.

Alfalfa is a three- to five-year, or longer, investment and therefore it is crucial to ensure proper establishment. Some producers shy away from alfalfa because of its high establishment cost and risk of stand failure. In the end, however, it is relatively inexpensive, if amortized over the life of the crop.

Under proper management and favorable weather conditions, dryland alfalfa can produce 3 to 6 dry matter tons of forage per acre per year. Irrigated fields can produce 6 to 8 dry matter tons per acre per year or more.

When planting alfalfa, producers should keep the following in mind:

Soil test and correct soil acidity. Alfalfa grows best in well-drained soils with a pH of 6.5 to 7.5, and does not tolerate low soil pH. For areas east of the Flint Hills, if the pH drops below 6.4, add lime to raise soil pH to 6.8 before planting. For the Flint Hills and areas west, lime is recommended when the pH drops below 5.8 with a target pH of 6.0. Ensuring appropriate soil pH levels prior to planting is essential, especially as lime is relatively immobile in the soil profile and the field will not be worked for the next 3-5 years. For more information on liming alfalfa fields, see the previous eUpdate article published on July 26, 2019: "Liming prior to fall seeding of alfalfa".

Soil test and meet fertilization needs. Apply the needed phosphorus (P) and potassium (K) amounts according to soil test recommendations. Phosphorus fertilizer will be required if soil test P levels are below 25 ppm, and potassium fertilizer will be required if soil K levels are below 130 ppm. Even soils that test higher than these thresholds may need additional fertilizer. Small amounts of N fertilizer (15 to 20 lb/acre) as a starter at planting are beneficial for alfalfa establishment.

Plant certified inoculated seed. Ensuring the correct *Rhizobium* inoculation is crucial for alfalfa seedlings to fix available soil nitrogen to meet the needs of growing alfalfa for optimum production.

Plant in firm, moist soil. A firm seedbed ensures good seed-soil contact; therefore, use a press wheel with the drill to firm the soil over the planted seed. No-till planting in small-grains stubble will usually provide a good seedbed.

Do not plant too deeply. Plant one-fourth to one-half inch deep on medium- and fine-textured soils and three-fourths inch deep on sandy soils. Do not plant deeper than 10 times the seed diameter.

Use the right seeding rate. Plant 8 to 12 pounds of seed per acre on dryland in western Kansas, 12 to 15 pounds per acre on irrigated medium- to fine-textured soils, 15 to 20 pounds per acre on irrigated sandy soils, and 12 to 15 pounds per acre on dryland in central and eastern Kansas. Double drilling, with the second seeding drilled 45 degrees to the first planting can help ensure a good uniform stand. If using the double drill method, each pass should be planted at 50% for the total seed rate to be 100%.

Check for herbicide carryover that could damage the new alfalfa crop – especially when planting no-till alfalfa into corn or grain sorghum stubble. In areas where row crops were drought-stressed and removed for silage, that sets up a great seedbed for alfalfa, but may still bring a risk of herbicide damage.

Choose pest-resistant varieties. Resistance to phytophthora root rot, bacterial wilt, fusarium wilt, verticillium wilt, anthracnose, the pea aphid, and the spotted alfalfa aphid is essential. Some varieties are resistant to even more diseases and insects.

Purchase alfalfa varieties with a fall dormancy rating ranging from 4 - 6 for Kansas. Fall dormancy relates to how soon an alfalfa variety will stop growing in the fall and how early it will begin growing in the spring or late winter. Simply put, it would be better not buy a variety with fall dormancy of 9-10, which can be more suitable for California and regions where alfalfa can keep growing year-round under irrigation.

Find more information about growing alfalfa in Kansas in the *Alfalfa Production Handbook*. This publication is available on the web at: www.ksre.ksu.edu/bookstore/pubs/c683.pdf

Also see *Alfalfa Growth and Development*, available on the web at: https://www.bookstore.ksre.ksu.edu/pubs/MF3348.pdf

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3. Early planting of wheat can lead to several problems

The general target date for planting wheat for optimum grain yields in Kansas is within a week of the best pest management planting date, or BPMP (formerly known as the "Hessian fly-free") date (Figure 1). If forage production is the primary goal, earlier planting (mid-September) can increase forage yield. However, if grain yield is the primary goal, then waiting until the BPMP date to start planting is the best approach (Figure 2). Planting in mid-September is ideal for dual-purpose wheat systems where forage yields need to be maximized while reducing the effects of early planting on reduced grain yields.

Optimum wheat planting dates in Kansas depend on location within the state. Suggested planting dates by zone are as follows:

Zone 1: September 10-30

Zone 2: September 15 – October 20

Zone 3: September 25 – October 20

Zone 4: October 5 – 25

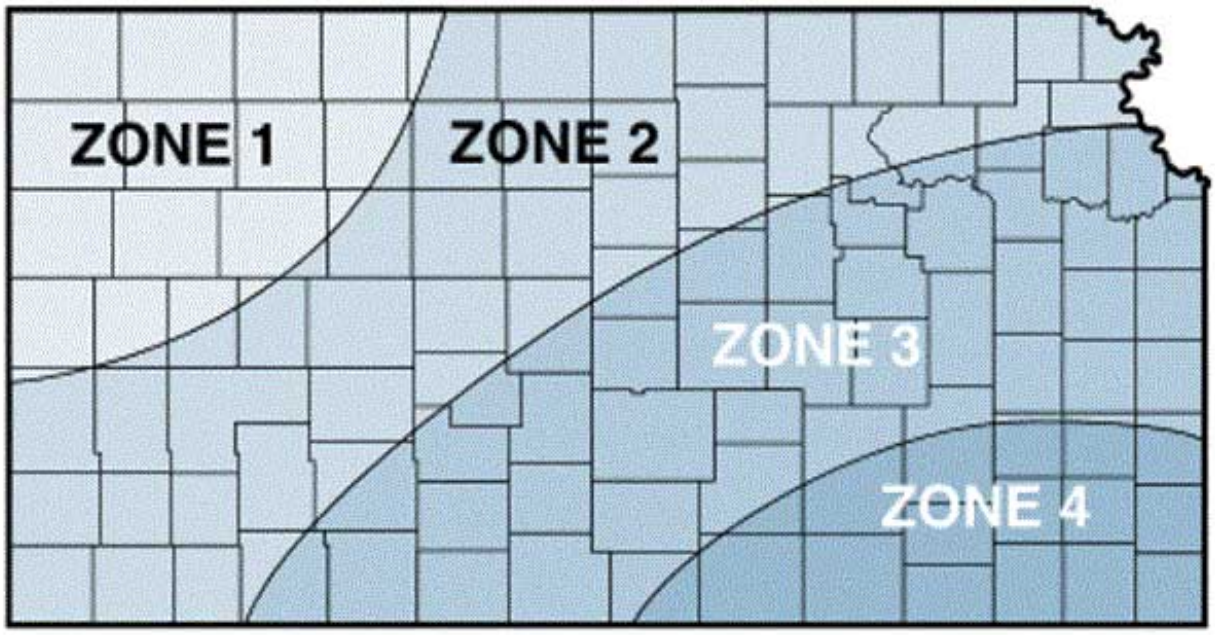

Figure 1. Optimum wheat planting dates by zone in Kansas.

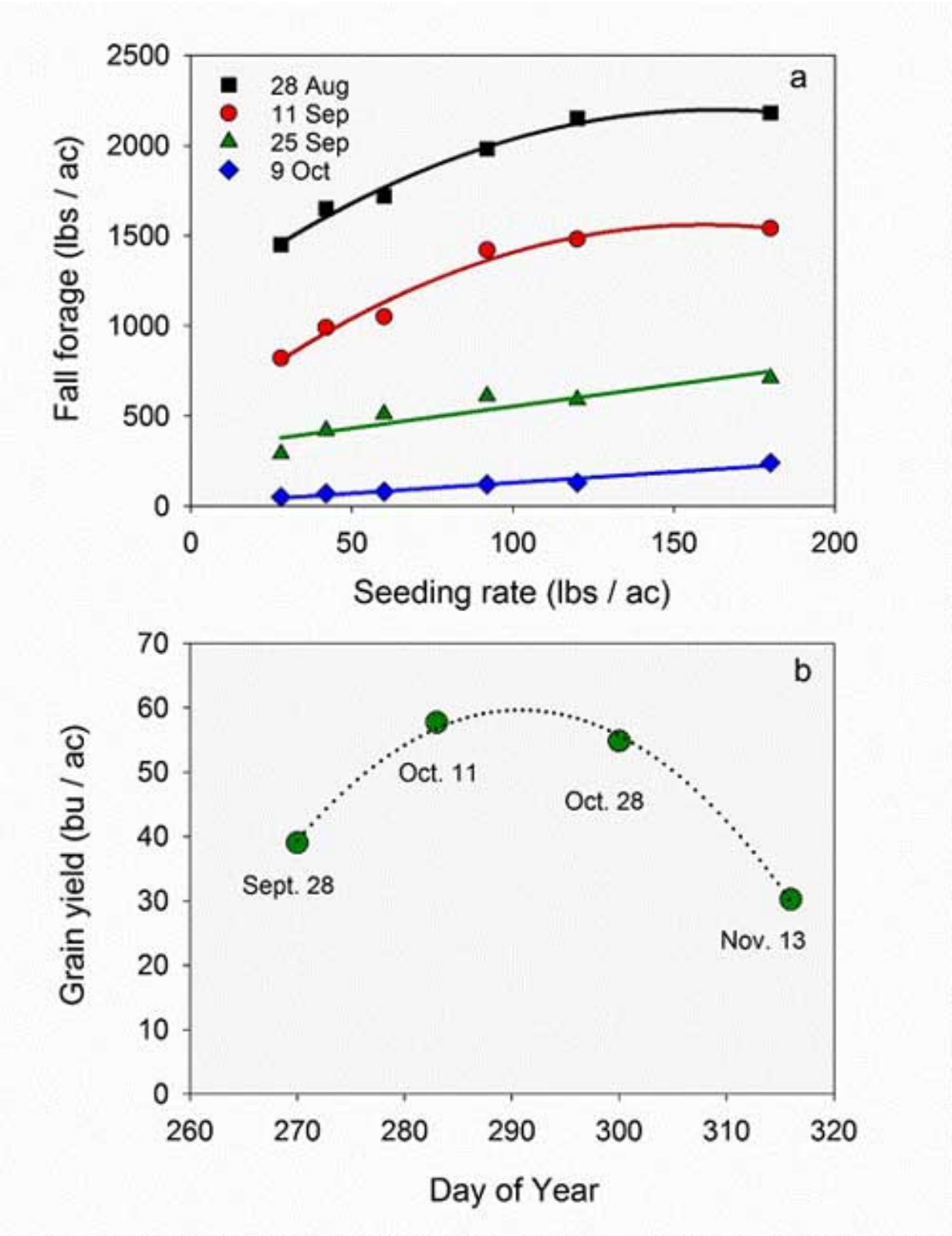

Figure 2. Effect of planting date and seeding rate on wheat fall forage yield in Lahoma, north-central Oklahoma (a) and effect of planting date on wheat grain yield near Hutchinson, south-central Kansas (b). Figure adapted from KSRE numbered publication MF3375.

While the effects of planting date on wheat yield shown in Figure 2 will hold true for most years, they will largely depend on environmental conditions and disease pressure during the growing season. In some years, earlier-planted wheat does best and some years the later-planted wheat does best. For instance, early-planted fields in the last two growing seasons had a better final stand relative to later-planted ones in western Kansas, mostly due abnormal soil moisture conditions experienced by the later planted fields. In dry years, seedling emergence and stand establishment can be uneven. These dry conditions can also lead to poor crown root development and fall tillering. If fields become too wet to plant by mid-October and stay that way through the remainder of the fall, then producers end up planting much later than the optimum planting date. Following an unusual year, producers will often start planting earlier than the recommended date if soil conditions are good, because the negative consequences of adverse conditions are fresh on their minds. However, planting early also increases the risk of other production problems including multiple diseases, insect pests, weed infestations and undesirable growth of the crop.

Potential risks of planting wheat early

Increased risk of **wheat streak mosaic and related diseases**. Wheat curl mites that spread these diseases survive the summer on volunteer wheat and certain other grasses. As those plants die off, the wheat curl mites leave in search of new plants to feed on. Early-planted wheat is likely to become infested, and thus become infected with wheat streak mosaic virus, high plains virus, and Triticum mosaic virus. The wheat curl mites are moved by wind and can be carried a mile or more before dying, so if wheat is planted early, make sure all volunteer wheat within a mile is completely dead at least two weeks before planting.

Increased risk of **Hessian fly**. Over the summer, Hessian fly pupae live in the old crowns of wheat residue. After the first good soaking rain in late summer or early fall, these pupae (or "flaxseed") will hatch out as adult Hessian flies and start looking for live wheat plants to lay eggs on. They are most likely to find either volunteer wheat or early-planted wheat at that time. After the BPMP date, many of the adult Hessian fly in a given area will have laid their eggs, so there is generally less risk of Hessian fly infestation for wheat planted after that date. Hessian fly adult activity has been noted through November or even early December in Kansas.

Increased risk of **barley yellow dwarf**. Many types of aphids can spread barley yellow dwarf. In Kansas, greenbugs and bird cherry-oat aphids are the primary vectors of this viral disease. These insects are more likely to infest wheat during warm weather early in the fall than during cooler weather. Planting wheat after the BPMD reduces the risk of problems with aphids and barley yellow dwarf.

Increased risk of **excessive fall growth and excessive fall tillering**. For optimum grain yields and winter survival, the goal is for wheat plants to go into winter with established crown roots and 3-5 tillers. Wheat that is planted early can grow much more than this, especially if moisture and nitrogen levels are good. If wheat gets too lush in the fall, it can use up too much soil moisture in unproductive vegetative growth. These fields are often experience more drought stress in the spring if soil conditions remain dry.

Increased risk of **take-all, dryland foot rot, and common root rot**. Take-all is usually worse on early-planted wheat than on later-planted wheat. In addition, one of the ways to avoid dryland foot rot (*Fusarium graminearum* and other *Fusarium* species) is to avoid early seeding. This practice promotes large plants that more often become water stressed in the fall predisposing them to invasion by the

fungi. Early planting of wheat also favors common root rot because this gives the root rot fungi more time to invade and colonize root and crown tissue in the fall.

Grassy weed infestations become more expensive to control. If cheatgrass, downy brome, Japanese brome, or annual rye come up before the wheat is planted, they can be controlled with glyphosate or tillage. If wheat is planted early and these grassy weeds come up after the wheat has emerged, producers will have to use an appropriate grass herbicide to control them.

Germination problems due to high soil temperatures. Early planted wheat is sown in hotter soils, which may become problematic because some wheat varieties are sensitive to high-temperature during germination. In fact, some varieties will not germinate when soil temperatures are greater than 85°F. If planting early, it is important to select varieties that do not have high-temperature germination sensitivity or sow sensitive varieties later in the fall, when soil temperatures have cooled down.

Emergence problems due to shortened coleoptile length. Hotter soils tend to decrease the coleoptile length of the germinating wheat. Therefore, deeply planted wheat may not have long-enough coleoptiles to break through the soil surface resulting in decreased emergence and poor stand establishment. When soil temperatures are hot, it is often better plant wheat at a shallower depth (3/4 to 1 inch deep) even if moisture is absent in the top layers of soil. Planting wheat deep (>2 inches) increases the risk of poor emergence and unacceptable stands.

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4. Ag-Climate Update for August 2019

The Ag-Climate Update is a joint effort between our climate and extension specialists. Every month the update includes a brief summary of that month, agronomic impacts, relevant maps and graphs, 1-month temperature and precipitation outlooks, monthly extremes, and notable highlights.

August 2019 – Record rains, again

For Kansas, 2019 had the wettest August since 1895. State-wide average precipitation for the month was 6.9 inches, 208 % of normal. Only the Southwest Division was drier than normal, with an average 2.2 inches, 81% of normal. State-wide average temperature for August was roughly 66 degrees F, 0.4 degrees F cooler than normal. This ranks as the 53rd coolest on record. Temperature swings were large, ranging from 51 degrees F at Brewster 4W on the 28th to 108 degrees F at Lakin on the 1st. Severe weather was more active than in July, with 8 tornadoes reported, 90 hail events, and 241 wind events.

Saturated fields continue to cause problems. These include sprouting, dropped ears, and mold in corn. Weed control has been a problem, as has haying. Corn, soybeans, and sorghum continue to lag behind normal progress. Relatively fewer growing degree days (GDD) accumulation across the state is delaying crop development. Overall, 16% of the corn is mature, but just 1 % has been harvested.

View the entire August 2019 Ag-Climate Summary at http://climate.k-state.edu/ag/updates/

5. Kansas Bankers Association Awards nominations due by November 4

Nominate a deserving Kansas producer or landowner for the 2019 Kansas Bankers Association Conservation Awards Program. This year, the Kansas Bankers Association, K-State Research and Extension, and the Kansas Department of Wildlife, Parks, and Tourism have announced six award categories:

- **Energy Conservation**
- **Water Quality**
- **Water Conservation**
- **Soil Conservation**
- **Windbreaks**
- **Wildlife Habitat**

The purpose of this program is to stimulate a greater interest in the conservation of the agricultural and natural resources of Kansas by giving recognition to those farmers and landowners who have made outstanding progress in practicing conservation on their farms. Last year 199 Kansas producers and landowners were recognized through this program.

Nominations can be made by any person in the county. They should be sent to the County Extension Agricultural Agent or the Kansas Department of Wildlife, Parks, and Tourism District Biologist by November 4, 2019.

The K-State Extension agent for Agriculture and Natural Resources, or the Extension Coordinator, is designated Chairperson of the committee to select persons to receive awards.

For more information, see:
http://www.agronomy.k-state.edu/extension/kansasbankersaward/kansas-bankers-awards.html

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6. 2019 Agronomy Fall Field Day, September 20 in Manhattan

The 2019 growing season presented many weather-related challenges to producers in Kansas and neighboring states. In response to these challenges, the focus of the 2019 Agronomy Fall Field Day is "**Building Resiliency in Agronomy**". The field day is scheduled for **Friday, September 20**, from 9:00 a.m. to 1:00 p.m. at the Agronomy North Farm in Manhattan. The event is free to attend and will conclude with a sponsored lunch for all attendees.

Topics will focus on understanding how different agronomic practices and technologies can aid producers in building a more resilient production system. An overview of the topics includes:

- Resilient soils through conservation practices
- Wheat genetics and technology
- Sorghum genetics and resiliency: Delivering traits from seed bank to seed bag
- Crop physiology and extreme temperatures
- Managing variability in the field
- Kansas Mesonet and climate data in Kansas

More detailed information concerning the program topics, speakers, and sponsors will be featured in an upcoming eUpdate. The online registration link is now open at: http://bit.ly/AgronFieldDay2019

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