Issue 1044

K-STATE Research and Extension

Extension Agronomy

eUpdate

03/13/2025

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. First hollow stem update - March 10, 2025

Cattle should be removed from wheat pastures when the crop reaches first hollow stem (FHS). Grazing past this stage can severely affect wheat yields. For a full explanation, please refer to the companion article in this eUpdate, "Optimal time to remove cattle from wheat pastures: First hollow stem."

First hollow stem update

To screen for FHS during this important time in the growing season, the K-State Extension Wheat and Forage's crew measure FHS on a weekly basis in 16 different commonly grown wheat varieties in Kansas. The varieties are in a September-sown replicated trial at the South Central Experiment Field near Hutchinson.

Ten stems are split open per variety per replication (Figure 1), for a total of 40 stems monitored per variety. The average length of the hollow stem is reported for each variety in Table 1. As of March 10, 12 out of 16 varieties had started to elongate their hollow stem, although still at very low levels.

Figure 1. Ten main wheat stems were split open per replication per variety to estimate first hollow stem for this report, for a total of 40 stems split per variety. Photo by Romulo Lollato, K-State Research and Extension.

Table 1. Length of hollow stem measured between February 17 and March 10, 2025 of 16 wheat varieties sown mid-September 2024 at the South Central Experiment Field near Hutchinson. The critical FHS length is 1.5 cm (about a half-inch or the diameter of a dime). Value(s) in bold indicate the highest FHS group.

	First Hollow Stem (cm)			
Variety	**2/17/2025**	**2/24/2025**	**3/6/2025**	**3/10/2025**
AP Sunbird	0	0	0	0.00
AP24 AX	0	0	0	0.03
AR Iron Eagle AX	0	0	0	0.06
AR Turret 25	0	0	0	0.04
CLH10-153.022	0	0	0	0.00
CLH10-1853.014	0	0	0	0.03
CP7017AX	0	0	0	0.01
CP7869	0	0	0	0.03
Kivari AX	0	0	0	0.09
KS Ahearn	0	0	0	0.01
KS Bill Snyder	0	0	0	0.00
KS Mako	0	0	0	0.02
KS Providence	0	0	0	0.01
KS Territory	0	0	0	0.00
KS21H36	0	0	0	0.01
Sheridan	0	0	0	0.01

We will report the progress of first hollow stem during the next few weeks until all varieties are past this stage. Additionally, first hollow stem is generally achieved within a few days from when the stem starts to elongate – depending on temperature and moisture conditions. Therefore, we advise producers to monitor their wheat pastures closely.

The intention of this report is to provide producers with an update on the progress of first hollow stem development in different wheat varieties. Producers should use this information as a guide. Still, it is extremely important to monitor FHS from an ungrazed portion of each individual wheat pasture to make the decision to remove cattle from wheat pastures.

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2. Managing spring-planted cover crops for grazing

The following is a summary of "Managing Spring Planted Cover Crops for Livestock Grazing under Dryland Conditions in the High Plains Region," a fact sheet produced in collaboration with extension specialists and research scientists at K-State, Colorado State University and the University of Nebraska. The comprehensive publication details recommended practices for species selection, adjusting stocking rates, and grazing management. The entire fact sheet can be viewed and downloaded at https://www.bookstore.ksre.ksu.edu/pubs/MF3443.pdf.

Quick Facts

- Cool-season species should be chosen for spring-planted cover crops to optimize growth and take advantage of winter and early spring moisture.
- Cool-season grasses tend to dominate, often to the detriment of other species, when planting cover crop mixtures in the spring.
- Yield variability is high when growing cover crops under dryland conditions in the High Plains Region, ranging from under 1,000 lbs/ac in dry years to almost 5,000 lb/ac in wet years.
- Stocking rates must be flexible because of the large year-to-year variability in cover crop productivity.
- Spring-planted cover crops can provide an average of 30 to 40 days of grazing.
- Start grazing spring-planted cover crops when they reach 6 to 8 inches of growth to take advantage of their high nutrient content and palatability.

Selection of Species

Determining what to plant can be daunting with all the varied species available for use as cover crops. For Kansas and Nebraska producers, local Land Grant Universities and the Midwest Cover Crops Council have developed a **decision tool** to help select species based on specified goals. When cover crops are grazed, one needs to choose species that will not only benefit soil health but will also be palatable and safe as forage for livestock. Fortunately, many of the species currently recommended for use as cover crops are also good for forage production. Factors such as nutritive content and potential toxicities must be considered.

While a number of potential problems can occur with various forages, most can be managed. The most frequent problem is the accumulation of nitrates that is common with oats and brassicas but can occur in a variety of species under certain growing and management conditions. Prussic acid is another toxicity to beware of when grazing, particularly with sorghums, but these species are less common in spring planted mixtures. Refer to publications on **nitrate** and **prussic acid** toxicities for more information. For a more complete overview of forage crops with potential toxicities, please see the publication **Grazing Management: Toxic Plants**.

For spring-planted cover crops, most, if not all, of the species planted should be classified as cool-season in order to be able to plant early and take advantage of winter and early spring moisture. Species that fall into this category include small grains (e.g., wheat, barley, oats, triticale, and cereal rye), brassicas (e.g., turnip, rapeseed/canola, and radish), and legumes (e.g., field/winter peas, winter lentils, vetch, and sweetclover).

Complex mixtures of 6 or more species, often referred to as "cocktails," are commonly recommended. The benefits of cocktails relative to single species or simple mixtures of 2 to 4 species depend on your specific management goals. Competitive cool-season grass species tend to be the highest biomass producers, which can optimize weed control and forage production. Mixtures are often used for benefits other than biomass production, such as providing nitrogen fixation by including legumes or soil pest suppression by including brassicas. From a grazing perspective, mixtures can produce forage with a range of palatability that can provide benefits and limitations.

Variability in Forage Production

Forage productivity will vary from year to year under dryland conditions, which makes this one of the biggest challenges facing producers that graze cover crops in the High Plains Region because stocking rates will need to be adjusted annually.

Producers have several options to manage this variability in forage production. A flexible herd size where animals can be added or subtracted based on a given year's productivity is the ideal situation. If it is difficult to adjust herd size, then the number of days a field can be grazed will have to be shortened or lengthened to achieve residue goals. In reality, expect to graze spring-planted cover crops for about 30 days in most years. This resource should be viewed as supplemental forage during the late spring and early summer to help relieve dependence on other forage resources such as native rangeland and baled hay. In most years, native pasture growth is sufficient for turn-out when cool-season cover crops near maturity. High stocking rates can help suppress stem elongation and heading, but producers need to be careful to not overgraze and leave sufficient residue for soil health benefits.

As a final note, in years with minimal precipitation and forage productivity (i.e. ~1,000 lbs/ac or less), the best choice might be to not graze at all if your primary goal is soil protection. Ideally, you want to maintain a minimum of 30% ground cover, and approximately 1,000 lbs/ac is needed to achieve that goal.

Grazing Management

When it comes to managing grazing of cover crops, numerous options can be considered. The ultimate strategy that is chosen will be influenced by your overarching goal(s) for the cover crop. Cover crops are generally grown for more reasons than just achieving high levels of harvest efficiency (i.e. percent utilization of available forage) as you would if this were a dedicated forage crop. You want to leave enough residue behind to maintain most of the benefits associated with planting cover crops (Figure 1).

Figure 1. Example of grazing and trampling impacts when predominantly cool-season grain cover crops are grazed during the heading stage. Regrowth is minimal and utilization is light (<30%) at this point, but trampling has left more than the target minimum of 30% ground cover.

Grazing management options include:

- **Continuous grazing**: Calculate a stocking rate based on the estimated yield and put the whole herd in one large field to graze. Advantages associated with this system of grazing are that no fences are moved and only one water source is needed (i.e. labor and inputs are minimal). However, if the field is large, livestock will tend to overgraze the forage closest to the water source while underutilizing the forage farthest from the water, unless you are able to move the watering location. Harvest efficiency will generally be around 30% with continuous grazing.

- **Rotational grazing:** A large field is divided into two or more smaller units, or paddocks, and the animals are rotated from one paddock to the next. This is also a good option that has some advantages and disadvantages. The more paddocks that the field is divided into, the higher the stocking density (i.e. number of animals per acre). Maintaining residue levels and minimizing soil compaction are two issues to consider with this method. The need to move fences every day or every few days and how to handle watering the animals are two of the biggest hurdles to overcome that keep many producers from practicing rotational grazing.

- **Strip grazing**: Similar to rotational grazing, where a temporary fence is set up to allow animals access to one to a few days' worth of feed, but differs in that there is no back fence, and animals can graze both fresh, residual, and regrowth forage. This method is convenient for watering animals as the fence can be set up so they have continuous access to a single water point. One drawback is increased compaction near the water source. Unlike rotational grazing, little regrowth accumulates when strip grazing because animals will continually

search out and graze any new growth in the previously grazed strips.

Once you have settled on a method of grazing, the next decision you need to make is when to start grazing your cover crop. If you are grazing steers and heifers and your goal is to achieve a given level of weight gain, then you need to start early to take advantage of high forage quality. The mixes we have been using for spring planted cover crops tend to be dominated by cool-season cereal grains like oats and barley. Once these species achieve 6 to 8 inches of growth, you should think seriously about starting to graze (Figure 2). Alternatively, some producers are more concerned about meeting their biomass goals for soil health and delay the start of grazing until plants are fairly mature.

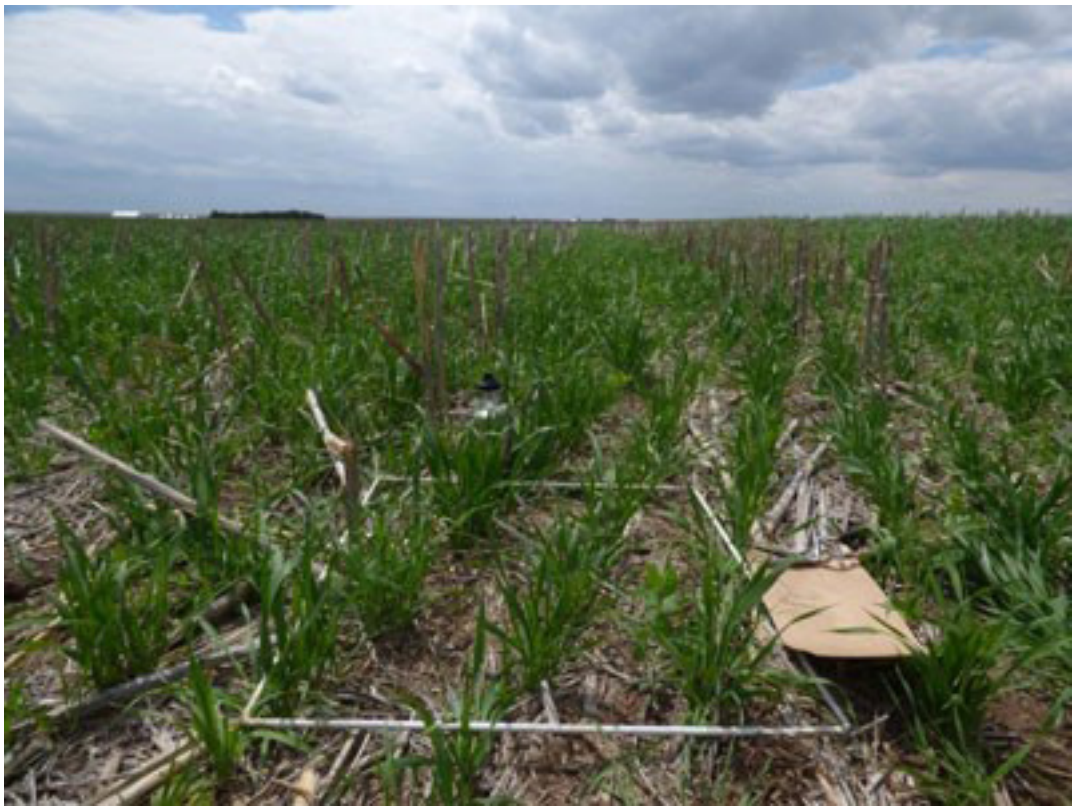

Figure 2. The above photo illustrates the proper time to start grazing (6 to 8 inches).

Determining Stocking Rates

Several key pieces of information are needed to estimate a stocking rate. The first is an estimate of the forage yield your field will produce during the period it will be grazed on a dry matter basis. How much forage will be consumed each day will depend on animal body weight and forage quality. For green and growing forages, intake will run from 2.5 to 3% of body weight on a dry matter basis. Another key input is the percent utilization desired. In dryland systems, 30% is a conservative starting point unless it appears to be an excellent moisture year with above-average yields. Calculations can be made to estimate days of grazing for a given number of animals or the number of animals for a set grazing period. A **Carrying Capacity Calculator** is also available to help with these calculations. Example calculations to determine stocking rates are detailed in the full publication linked in the first paragraph of this article.

Example Timeline

An example timeline is shown below with suggested planting, start grazing, and end grazing dates for spring-planted cover crops. This timeline will allow cover crops to effectively utilize winter and spring moisture to produce the highest yields possible under dryland conditions while providing livestock with high-quality forage.

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3. Residual herbicides for corn

Residual herbicides that kill weed seeds/seedlings as they germinate or emerge are important for herbicide applications at or before corn planting. These herbicides can control weeds for several weeks, which prevents yield loss due to early-season weed competition. They can greatly improve the effectiveness of a post-emergence herbicide application and give more flexibility for post-application timing. Residual herbicides are also an important component of sequential herbicide applications later in the growing season. In general, preventing the emergence of weeds, especially herbicide-resistant weeds, is preferable to controlling them after they emerge (Figure 1).

Figure 1. These photos from the Ashland Bottoms Research Farm illustrate the ability of a residual herbicide (applied in the plot on the right) to prevent early-season competition by a dense Palmer amaranth population. Photos by Sarah Lancaster, K-State Research and Extension.

Many cases of herbicide-resistant weeds have resulted from over-reliance on post-emergence herbicide applications, thus it is essential to include one or more residual herbicides that are available for corn. However, it is also important to remember to rotate residual herbicides from year to year to prevent the selection of tolerant or resistant weeds. The importance of this is reflected in the recent confirmation in other states of waterhemp and Palmer amaranth that are resistant to *S*-metolachlor (Dual).

The specific herbicide you use is important, but it is usually less important than deciding to use a residual herbicide program that includes at least two effective herbicides. But, it is important to know

the strengths and weaknesses of each product in terms of the spectrum of weeds controlled. A table summarizing weed species' response to various corn herbicides can be found on pages 24-26 of *2025 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland* (SRP 1190) at: https://bookstore.ksre.ksu.edu/pubs/SRP1190.pdf

Categories of residual herbicides for corn

Photosystem II Inhibitors (Group 5). Atrazine is the most widely used PS II inhibitor in corn. It controls a wide variety of broadleaf weeds, including pigweeds, ragweeds, morningglories, mustards, and some grass species. However, atrazine resistance has been reported for many weed species. Atrazine use rates are influenced by soil type, soil pH, and organic matter, and use is prohibited in instances where water contamination is likely. Unless your situation prohibits atrazine use, it is recommended to include atrazine when you apply HPPD- and VLCFA-inhibitor herbicides.

Very Long Chain Fatty Acid Inhibitors (Group 15). The main VLCFA products used in corn include acetochlor, *S*-metolachlor, metolachlor, dimethamid-P, and pyroxasulfone. In general, these products are very effective in controlling most annual grasses (except shattercane) and small-seeded broadleaf weeds such as pigweeds. They are much less effective in controlling kochia or large-seeded broadleaf weeds such as cocklebur, devilsclaw, morningglory, sunflower, and velvetleaf. An exception is those products containing pyroxasulfone. Though resistance to Group 15 herbicides has been reported in corn/soybean rotations in Illinois, there have been no cases of weed populations in Kansas developing resistance to the Group 15 herbicides to date.

Group 15 herbicides are most effective when applied with atrazine. In past years, often because of cost, reduced rates of these products were applied to help manage heavy summer annual grass pressure, then followed up with a good post-emergence herbicide program. With the increased occurrence of glyphosate- and other herbicide-resistant weeds, it is essential to use the full rates of these products in conjunction with a POST program.

HPPD-inhibitors (Group 27). Examples of HPPD-inhibitors are isoxaflutole (e.g. Balance Flexx) and mesotrione (e.g. Callisto and many generics). These products should be applied with atrazine. HPPD-inhibitors provide excellent control of kochia, pigweeds, velvetleaf, and many other broadleaf weeds, as well as grasses. Corvus (thiencarbazone + isoxaflutole) will control shattercane and common sunflower better than Balance Flexx, provided the sunflower is not ALS-resistant. Keep in mind, products containing Balance should not be applied to coarse-textured soils when the water table is less than 25 feet below the soil surface. Balance Flexx does not provide adequate control of sunflower.

PPO-inhibitors (Group 14). Examples of PPO-inhibitors include flumioxazin (e.g. Valor) and saflufenacil (Sharpen). Herbicides containing flumiozaxin must be applied 7 to 30 days before corn planting. These herbicides provide excellent control of pigweeds; however, they are marginal on kochia. Fierce (flumioxazin + pyroxasulfone) will provide improved control of velvetleaf and kochia compared to Valor. The addition of atrazine will enhance kochia, pigweed, velvetleaf, and morningglory control, provided the populations are not triazine-resistant. Sharpen and Verdict (saflufenacil + dimethenamid-P) have excellent activity on pigweeds, kochia, and large-seeded broadleaf weeds. However, the length of residual activity can be shorter than other pre-emergence products when all are compared at full rates. Approximately 7 to 10 days of residual can be expected per 1 oz of Sharpen and 5 oz of Verdict.

ALS-inhibitors (Group 2). One example of a pre-emergence ALS-inhibitor used in corn is flumetsulam (Python), which only has broadleaf activity and provides good control of large-seeded broadleaf weeds such as cocklebur, sunflower, and velvetleaf, or the small-seeded common lambsquarters. Flumetsulam is also a component of Hornet, Stanza, SureStart II, and TripleFlex II. These products are especially effective for control of sunflower, cocklebur, and velvetleaf, but less effective on morningglory species. .

Rimsulfuron is another ALS-inhibiting herbicide that is a component of Basis Blend, Instigate, Prequel, Realm Q, and Steadfast Q. Products with rimsulfuron will provide short residual control of grass and broadleaf weeds and should be used as a setup herbicide with a good post-emergence weed control program. If ALS-resistant broadleaf weeds are present, these ALS-containing herbicides often will be less effective.

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. Start monitoring alfalfa weevils using degree days and scouting

Degree day accumulations for Kansas alfalfa weevils are well ahead of normal for the entire state this year (Table 1). A similar trend occurred in 2024. As air temperatures continue to increase, it is recommended that scouting for weevil activity should be occurring right now in all regions of the state. There is a confirmed report of weevil activity in northeast Kansas.

Table 1. Alfalfa weevil degree days as of March 12, 2025. Kansas Mesonet, 2025: Kansas Mesonet Alfalfa Weevil Degree Days Accessed 12 March 2025, http://mesonet.k-state.edu/agriculture/degreedays/

	Accumulated Alfalfa Weevil Growing Degree Days			
	Station	**Actual**	**Normal**	**Departure**
Northwest	Cheyenne	164	28	136
	Colby	165	25	140
Southwest	Garden City	236	59	178
	Meade	257	61	196
North-central	Hays	177	31	146
	Osborne	168	15	153
South-central	Hutchinson	190	35	158
	Harper	216	61	155
Northeast	Manhattan	135	27	108
	Corning	110	13	97
Southeast	Cherokee	197	55	142
	Woodson	180	41	139

Alfalfa weevil degree days are a great way to estimate what might be going on in the field and serve as a useful tool to know when to time scouting. Alfalfa weevil eggs begin hatching after 300 degree days have accumulated (Table 2). Since we cannot determine if eggs present were laid the previous fall or the current spring, in Kansas, scouting should start after 180 degree days have accumulated starting from January 1.

Table 2. Approximate degree days required for alfalfa weevil development. Excerpt from Whitworth et al., Alfalfa Weevils, Kansas State University, October 2022 (MF2999).

Degree Days or Thermal Units	Stage	Importance
25-300	Eggs hatch	In stems
301-450	1st and 2nd instars	Leaf pinholing – start sampling
450-600	2nd and 3rd instars	Defoliation
600-750	3rd and 4th instars	Defoliation
750+	Pupa to adult	Adults – some feeding - oversummering

Be aware of insecticide resistance

While warmer spring temperatures allow for faster alfalfa weevil development, be aware that dramatic temperature drops can slow down alfalfa growth, making the plants unable to keep up with feeding damage. Treatment may be warranted in shorter fields between 3 and 7 inches tall when feeding is evident on the top inch of growth, and 1 to 2 larvae are present. If a field is treated, it is important to verify that the expected amount of control was achieved. In 2020, populations of alfalfa weevil resistant to lambda-cyhalothrin were verified in northwest and southwest Kansas and Oklahoma. While this resistance has not appeared to become a widespread problem for Kansas producers, a couple of fields reported in central Kansas last year where lambda-cyhalothrin had reduced efficacy. Oklahoma continues to have resistance statewide. Numerous products are available for alfalfa weevil control in Kansas (Table 3). When making management decisions, it is important to rotate modes of action as this is an effective way to prevent the development of resistance.

Table 3. Products registered in Kansas for control alfalfa weevil. Treatments listed are mainly used for treating alfalfa weevil larvae; products with an asterisk are also recommended for adult alfalfa weevil control. For more specific information relative to any insecticide, always refer to the actual label on the product.

Trade Name	Chemical Name	Mode of Action Class
Fastac CS	*Alpha-cypermethrin*	3A
Baythroid XL	*Beta-cyfluthrin*	3A
Lorsban	*Chlorpyrifos*	1B
Cobalt Advanced	*Chlopyrifos + lambda-cyhalothrin*	1B+3A
Stallion	*Chlopyrifos + zeta-cypermethrin*	1B+3A
Tombstone	*Cyfluthrin*	3A
Proaxis	*Gamma-cyhalothrin*	3A
Steward	*Indoxacarb*	22A
Warrior II w/Zeon Tech	*Lambda-cyhalothrin*	3A
Beseige	*Lambda-cyhalothrin + chlorantraniliprole*	3A+28
Lannate	*Methomyl*	1A
Imidan 70-W*	*Phosmet*	1B
Mustang MAXX	*Zeta-cypermethrin*	3A

For the most up-to-date alfalfa weevil degree day accumulations, visit the Kansas Mesonet Alfalfa Weevil Degree Day Calculator (https://mesonet.k-state.edu/agriculture/degreedays/). For a complete guide to alfalfa weevil management recommendations, please refer to the upcoming 2025 Alfalfa Insect Pest Management Guide that will be available online soon.

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5. Drought Resilience and Recovery Schools in Southwest Kansas

Join us in south central and southwest Kansas for a series of five Drought Resilience and Recovery Schools. Meetings will kick off with a weather update and outlook for 2025, followed by topics ranging from alternative grain and forage crops/cropping systems to pasture and pond management. Each meeting will have a meal provided.

See below for details by location:

Harper County - March 25, 2025 (9:00AM)

- Location: Westview Lodge, 1100 W 14th St, Harper, KS 67058
  - Speakers:
    - Weather Update and Outlook – Chip Redmond, KSRE
    - Pasture Management and Stocking Rates – Lody Black, KSRE
    - Water and Pond Management – Joe Gerken, KSRE
    - Alternative Forage Selection – Jenni Carr, KSRE
- RSVP with Macaley Hall at (620)842-5445 or macaleyh@ksu.edu

Pratt County – March 25, 2025 (4:00PM)

- Location: Pratt Area 4-H Center, 81 Lake Rd, Pratt, KS 67124
  - Speakers:
    - Weather Update and Outlook – Chip Redmond, KSRE
    - Water use and conservation – Jonathan Aguilar, KSRE
    - Alternative Crops/Cropping Selection – Logan Simon, KSRE
    - Water and Pond Management – Joe Gerken, KSRE
- RSVP with Jenna Fitzsimmons at (620)672-6121 or jbfitzsimmon@ksu.edu

Morton County – March 26, 2025 (4:00PM)

- Location: Morton County Civic Center, 400 E Orchard St, Elkhart, KS 67950
  - Speakers:
    - Weather Update and Outlook – Chip Redmond, KSRE
    - Pasture Management and Stocking Rates – Keith Harmoney, KSRE
    - Alternative Forage Selection – Logan Simon, KSRE
    - Alternative Crops/Cropping Selection – Logan Simon, KSRE
    - Mental Health and Wellbeing – Crystal Bashford, KSRE
- RSVP with Megan Frownfelter at (620)697-2558 or mfrownfelter@ksu.edu

Wichita County – March 26, 2025 (9:00AM)

- Location: Wichita County Community Building, 502 W St, Leoti, KS 67861
  - Speakers:
    - Weather Update and Outlook – Chip Redmond, KSRE
    - Alternative Crops/Cropping Selection – Logan Simon, KSRE
    - Water use and conservation – Jonathan Aguilar, KSRE
    - Pasture Management and Stocking Rates – Keith Harmoney, KSRE

- RSVP with Allen Baker at (620)675-2724 or abaker@ksu.edu

Hodgeman County – March 26, 2025 (4:00PM)

- Location: Hodgeman County Fair Building, S Atkin St, Jetmore, KS 67854
    - Speakers:
        - Weather Update and Outlook – Chip Redmond, KSRE
        - Alternative Crops/Cropping Selection – Logan Simon, KSRE
        - Pasture Management and Stocking Rates – Keith Harmoney, KSRE
- RSVP with DeWayne Craghead at (620)357-5315 or hg@listserv.ksu.edu

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6. Join the conversation on cover crops by participating in a new survey

Kansas State University, in collaboration with the Colorado Conservation Tillage Association (CCTA) and the Kansas Natural Resources Conservation Service (NRCS), invites all producers from the semi-arid Great Plains region to participate in a survey that will gain insight into how producers view incorporating cover crops into their cropping systems.

There have been many cover cropping surveys conducted nationwide. However, many of these participants come from regions in the United States where there are more rainfall events or irrigated acres. Therefore, the semi-arid Great Plains region is not adequately represented, and the data collected may not be practical for agricultural production systems in this region. This region-specific survey will bring new perspectives on growing cover crops in water-limited environments, as they are becoming a popular conservation practice.

This survey is being conducted to gain producers' perspectives on the use of cover crops in water-limited environments, particularly in drier regions of Kansas, Nebraska, and Colorado. The survey includes questions regarding 1) management practices, 2) resource concerns, 3) if cover crops are used, 4) why or why not cover crops are incorporated, 5) benefits and limitations of using cover crops, and 6) the USDA Program assistance regarding cover crops. At the conclusion of the survey, participants will be asked if they would like to participate in an optional follow-up in-person interview. Overall, survey participants will provide their perspectives and insights on cover crop use in their operation. All identities will be kept confidential outside of KSU, CCTA, and Kansas NRCS. Participant information, even if identities are removed, will not be used or distributed for future research studies.

All data collected from the survey and interviews will be used to generate extension publications on management guidelines for successful cover cropping in semi-arid regions. This data will also provide recommendations for reviewing USDA farm and conservation programs that will align better with current farming practices adopted by producers to improve soil health in semi-arid environments.

We invite all producers in the semi-arid region, whether they have experience with cover crops or not, to take our survey. To access the survey, follow one of three steps below:

- Click this link to access the survey.

- Type in the following web address into your web browser:
  https://kstate.qualtrics.com/jfe/form/SV_cZmbxKImWhjkXQ2

- Scan the QR Code below.

If you have any questions regarding this survey, please feel free to contact:

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Dr. Logan Simon at (620)276-8286 or lsimon@ksu.edu