Issue 945

K-STATE Research and Extension

Extension Agronomy

# eUpdate

*03/02/2023*

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. Marestail in soybeans: Strategies for the best control

Controlling marestail in soybeans continues to be a big challenge for Kansas no-till producers. Application timing and weed size are critical factors for successful control of this weed that germinates in the fall or early spring. Research has shown that up to 80% of marestail can die over the winter as a result of cold temperatures and/or lack of adequate moisture. In addition, a well-established cover crop in the fall can further reduce marestail establishment and survival and often is quite effective for marestail control. However, marestail that does survive is often robust and can be difficult to control with herbicides, especially later in the spring. Herbicide options are also limited by widespread resistance to glyphosate and/or ALS-inhibiting (group 2) herbicides in marestail.

**Figure 1. Glyphosate-resistant marestail in soybeans. Photo by Dallas Peterson, K-State Research and Extension.**

### Early spring options

In the early spring, using a Group 4 (growth regulator) herbicide such as 2,4-D and/or dicamba is an inexpensive and effective option to control rosette marestail (Figure 2, left). Dicamba provides better marestail control than 2,4-D and will also provide some residual control, especially at higher use rates. Haluxifen (Elevore) is a newer group 4 herbicide that can provide similar marestail control to dicamba. Making these applications in March generally allows adequate time ahead of planting soybeans to meet required pre-plant intervals, but more importantly, spraying weeds before they bolt (Figure 2, right) will result in greater control , In general, marestail in Kansas will bolt in April, so now is the time for these applications.

Using herbicides with longer residual helps control weeds that germinate between early spring applications t and soybean planting. Products that include chlorimuron (Classic, Canopy), cloransulam (FirstRate), flumioxazin (Valor, others), saflufenacil (Sharpen, Optill, Verdict), or metribuzin, can help provide residual control against several broadleaf species, including marestail. However, it is very important to consult and follow the herbicide label guidelines for the required pre-plant intervals prior to planting soybeans as well as the proper rate for your soil. Also keep in mind that resistance may reduce the effectiveness of ALS-inhibiting herbicides such as chlorimuron and cloransulam.

**Figure 2. Marestail in the rosette growth stage (left photo) versus bolted (right photo). Photos by Sarah Lancaster, K-State Research and Extension.**

**Pre-plant options**

As soybean planting nears, existing marestail plants can become difficult to control because plants will have bolted and be considerably larger. Herbicides to apply as a burndown prior to planting include tank mixes of glyphosate with 2,4-D, and the residual products listed above.

Be very careful to follow label directions regarding plant-back restriction when applying 2,4-D or dicamba ahead of soybean varieties that are not resistant to the herbicide you use. Enlist soybean varieties have no plant-back restriction for Enlist One or Enlist Duo and Xtend varieties have no plant-back restriction for XtendiMax, Engenia, or Tavium. However, non-resistant varieties have plant-back restrictions that range from 0 to 30 days depending on the herbicide rate and formulation, as well as soybean variety, precipitation, and geography.

One additional herbicide to consider as a rescue burndown application to control bolting marestail prior to soybean planting is glufosinate (Liberty and others). Although, it would be better to control marestail at an earlier stage of growth, glufosinate has been one of the most effective herbicides to control bolting marestail. Glufosinate also has broad spectrum non-selective activity on other broadleaf and grass species if treated at a young growth stage. Glufosinate is primarily a contact herbicide, so a spray volume of 15 gallons per acre or greater generally provides the most consistent

weed control. Glufosinate tends to work best under higher humidity and warm, sunny conditions at application.

**Post-emergence options**

Controlling marestail in the growing soybean crop can be the biggest challenge for producers, especially in soybeans that are not resistant to 2,4-D or dicamba. If Roundup Ready 2 Xtend or XtendFlex soybeans are planted, Xtendimax and Engenia should be some of the most effective herbicides for post-emergence control of marestail in soybeans. Remember that XtendiMax and Engenia can only be applied to Xtend soybeans. Similarly, Enlist One or Enlist Duo will be effective control options in Enlist E3 soybeans. One final post-emergence option to consider is glufosinate. Glufosinate resistance is in Liberty Link, Enlist E3, and XtendFlex varieties. However, glufosinate-containing herbicides cannot be tankmixed with XtendiMax, Engenia, or Tavium.

For more detailed information, see the "2023 Chemical Weed Control for Field Crops, Pastures, and Noncropland" guide available online at https://bookstore.ksre.ksu.edu/pubs/SRP1176.pdf or check with your local K-State Research and Extension office for a paper copy.

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## 2. Tips for safe and successful prescribed burning this spring

The prescribed burning season in Kansas has started. The outlook for potential wildland fire in Kansas is above normal for parts of Kansas (see recent eUpdate article https://bit.ly/3kn35gM). This article discusses reasons for conducting a prescribed burn and ways to have a safe and successful prescribed burn when much of the state in a heightened state for wildfires. In addition, there are some online tools and resources that will be useful when planning a prescribed burn.

**Reasons for conducting a prescribed burn**

Brush control and increased stocker gains often top the list when you ask that question. Decades of data have indicated that a mid- to late-spring burn enhances stocker gains with an average of an additional 32 pounds per animal grazing burned pastures. Stocker gains from burned pastures have almost always been higher, even in dry years. Brush control is more apt to occur once the woody plants are leafed out. The exception is eastern red cedar, vulnerable to prescribed burning at any time. Other reasons for burning include conservation of the native plant community, improving grazing distribution, enhancing wildlife habitat, and decreasing the severity of wildfires. Maintenance of conservation reserve program (CRP) acres is another use of prescribed burning. Normally, CRP acres are burned between February 1 and April 15 in eastern Kansas and February 1 and April 30 in the west. Summer burns after July 16 are also allowed in Kansas. Be sure to check with your local FSA office regarding burning of CRP in your county.

**Weather forecasts and smoke model**

Weather forecasts can be obtained from the NWS offices in Topeka, Wichita, Dodge City, Goodland, Hastings, NE, Kansas City/Pleasant Hill MO, and Springfield, MO. Online, simply type weather.gov/ and the name of your NWS office.

Weather conditions for conducting a safe prescribed burn are:

- wind speeds 5-15 mph,
- 40-70% relative humidity, and
- air temperatures of 50-80$^{o}$F.

The amount of cloud cover and mixing height will influence smoke dispersal. Check under the hourly forecast to see what is expected. That hourly forecast is also helpful to see when wind shifts might occur.

A smoke model located at ksfire.org predicts the direction smoke from a fire will travel based on current weather conditions, location, date, amount of fuel, and size of area to be burned. Another site providing useful information relative to conducting a prescribed burn is the Kansas Mesonet. You can see current humidity and wind direction at mesonet.ksu.edu/fire/rh at 70+ locations across the state.

If you plan on prescribed burning this year in particular, here are a few things to be mindful of:

- Fires will burn more aggressively, be unpredictable, and hard to contain - especially during periods of light wind.
- If prescribed burning, we recommend cutting larger fuel breaks in advance and expect less

effective timber control lines.
- Fire response and prescribed burning this spring will require more people/equipment due to conditions.
- Know the forecast 2-3 days in advance and prepare accordingly.
- **Make sure prescribed fires are completely extinguished.**
- Consider waiting until green-up is more established.

**Know the prescribed burn regulations**

If you are planning to burn this spring, be sure to know your local regulations. Kansas regulations require the person conducting the burn to:

1. notify the local fire authority,
2. not create a traffic safety hazard,
3. not create an airport safety hazard, and
4. insure that the burning is supervised until the fire is extinguished.

Your county may require a burn permit. Always check with local authorities to ensure burning is allowed before starting a prescribed burn.

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## 3. Optimal time to remove cattle from wheat pastures: First hollow stem

The unique climate characteristics of the US Southern Great Plains allow producers to use wheat as a forage and grain crop (dual-purpose), potentially increasing overall profitability compared to grain-only or forage-only systems. Date of grazing termination is an important factor in determining wheat's recovery potential and ability to produce grain. First hollow stem (FHS) is the optimal time to remove cattle from wheat pastures to protect grain yield potential.

**What is the first hollow stem (FHS) stage of wheat development?**

Before the wheat leaf sheaths become erect after spring green-up, the developing growing point, which is below the soil surface, will soon begin to form a tiny head. Although the head is quite small at this point, it has already established some important yield components. At this stage, the maximum potential number of spikelets is determined. Sufficient nitrogen (N) should already be available in the root zone at this growth stage to maximize the potential number of seeds per head.

Once the embryo head has developed, the first internode will begin to elongate, pushing the head up through the leaf sheaths. This first internode will be hollow. This will be visible before you can actually feel the first node (joint, located just above the first internode).

FHS is the point at which a 1.5 cm (about half-inch) length of hollow stem can first be identified below the developing head (Figure 1). This length is roughly equivalent to the diameter of a dime, which makes its identification in the field easier. FHS occurs when the developing head is still below the soil surface. This means that producers have to dig plants out of the ground to measure it.

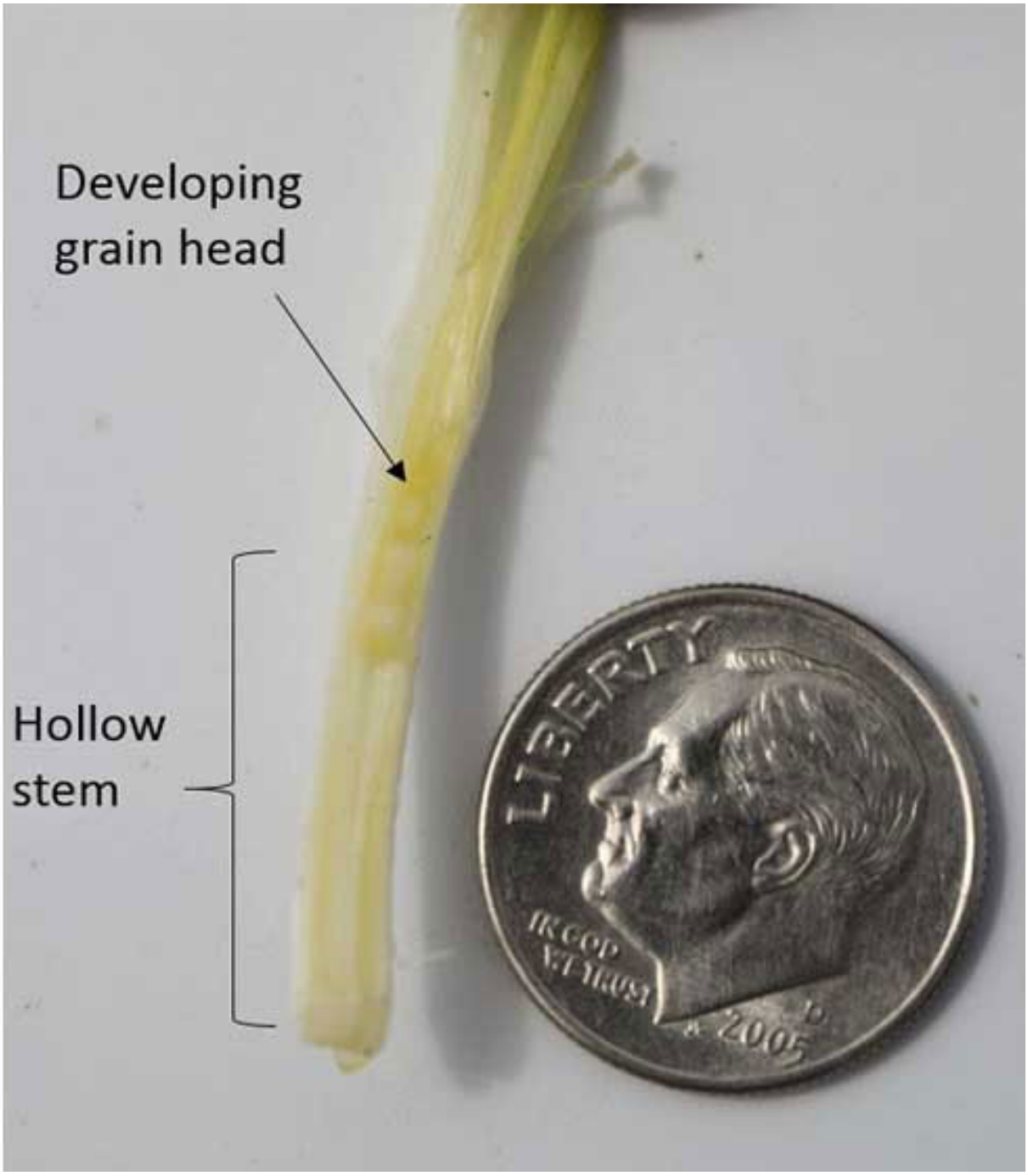


**Figure 1. Wheat plant reaching the first hollow stem stage of growth, characterized by approximately 1.5 cm (or roughly the diameter of a dime) of hollow stem underneath the developing grain head. Photo by Romulo Lollato, K-State Research and Extension.**

**Assessing for first hollow stem**

To look for FHS, start by digging up some plants from fields or areas that have not been grazed, such as field corners or just outside the fence. Date of FHS is variety- and field-specific, so it is important to sample each individual field. Select the largest tillers to examine, and slice the stem open from the crown area up. Look for the developing head, which will be very small. Next, see if you can find any

hollow stem between the developing head and the crown area. If there is any separation between the growing point and crown, the hollow stem is elongating. If that separation is 1.5 cm, the wheat plant is at FHS. FHS occurs between a few days to a week or more prior to jointing, depending on temperatures.

**New tool for estimating wheat first hollow stem**

Winter wheat is beginning to break dormancy, and the Kansas Mesonet has introduced a new tool to help track the crop development: Wheat First Hollow Stem page. This page tracks soil temperature to calculate wheat growing degree days (GDD) associated with first hollow stem occurrence. This tool employ a wheat growth model developed by Oklahoma State University and the Oklahoma Mesonet, which was validated for wheat growing conditions experienced in south central Kansas during the 2016-2021 growing seasons. The output of the model provides the probability of first hollow stem occurrence (current and historical) both for early and late maturing wheat varieties. More details for the tool are found here.

**Yield losses from grazing past first hollow stem**

If the wheat has reached FHS, cattle should be removed to prevent grain yield loss. Yield losses from grazing after FHS can range from 1 to 5% per day, depending on grazing intensity and the weather following cattle removal (Figure 2). If cattle removal is followed by cool, moist weather, yield losses will often average about 1% per day grazed after FHS; if weather is hot, dry, and harsh, yield losses of 5% per day or more can be expected. It is easy for producers to be late by a few days in removing livestock as they wait for obvious nodes and hollow stems to appear, and even the first few days can be significant.

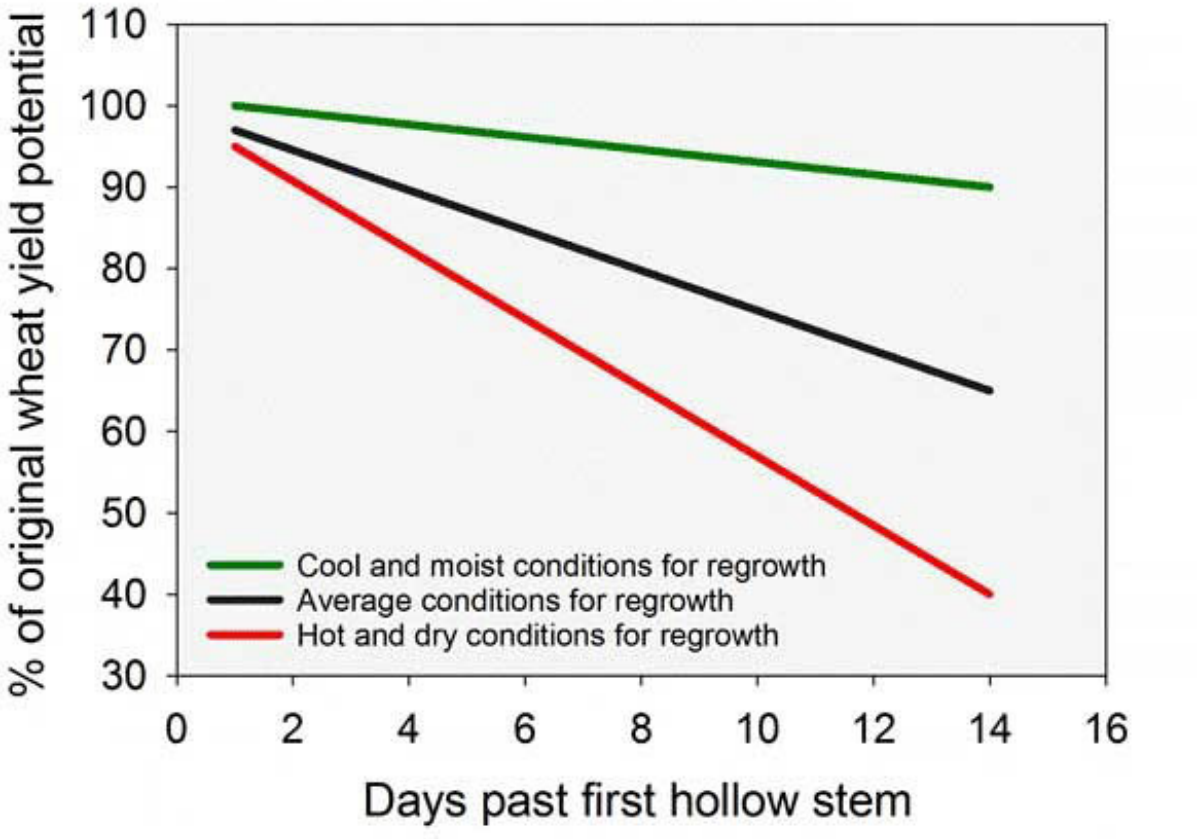


**Figure 2. Percent of original wheat yield potential as affected by days of grazing past first hollow stem and weather conditions following grazing termination. Average yield losses by grazing for 14 days past first hollow stem ranged from 10% under favorable conditions to 60% under non-favorable conditions. Research conducted by Oklahoma State University (OSU) and published as K-State publication MF3375 and OSU publication PSS-2178.**

Two things can occur when wheat is grazed too long: 1) fewer heads per acre because the primary tiller has been removed, and 2) smaller and lighter heads than expected because leaf area has been removed. As cattle continue grazing, the wheat plant is stressed and begins to lose some of the tillers that would produce grain. A little later, if there are not enough photosynthates, the plant begins aborting the lower spikelets in the head or some of the florets on each head. Finally, if there is not enough photosynthate during grain filling, the seed size will be reduced and if the stress is severe enough, some seed will abort.

**Air and soil temperatures during 2023**

Crop development is mostly a function of available water, nutrients, and temperature. Nutrient availability is field specific and thus we will not discuss it here. Water has been limiting since the fall for the majority of the wheat growing region of the state, which will likely slow down crop development. Likewise, average temperatures across most of Kansas were cooler-than-normal for the growing season this far, which has likely slowed down the progression toward first hollow stem compared to most years. As temperatures increase and wheat begins growing more rapidly in the spring, producers should start thinking about when to pull cattle off pasture to protect grain yields. Soil temperatures may be quick to warm as much of the state has dry soils. As the soils thaw, muddy

conditions may also influence the decision to remove cattle in some areas.

For more information on managing wheat in dual-purpose systems, check the K-State Research and Extension publication MF3375 [PSS-2178 from Oklahoma State Extension], "Dual-purpose wheat: Management for forage and grain production" at https://www.bookstore.ksre.k-state.edu/pubs/MF3375.pdf.

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## 4. First hollow stem update - March 2, 2023

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 eUpdate article "Optimal time to remove cattle from wheat pastures: First hollow stem" in this issue.

**First hollow stem update**

In order to screen for FHS during this important time in the growing season, the K-State Extension Wheat and Forages crew measures FHS on a weekly basis in 22 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 30 stems monitored per variety. The average length of hollow stem is reported for each variety in Table 1. As of March 2, 2023, no variety had reached first hollow stem. In fact, not a single variety has started to elongate their stems.

**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 30 stems split per variety. Photo by Romulo Lollato, K-State Research and Extension.**

**Table 1. Length of hollow stem measured February 22 and 27, 2023, of 22 wheat varieties sown mid-September 2022 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** | **2/20/2023** | **2/27/2023** |
| AM Cartwright | 0 | 0 |
| AP EverRock | 0 | 0 |
| AP Prolific | 0 | 0 |
| AP Roadrunner | 0 | 0 |
| AP18 AX | 0 | 0 |
| ARMOR EXP55 | 0 | 0 |
| ARMOR EXP6 AX | 0 | 0 |
| CP7017 AX | 0 | 0 |
| CP7050 AX | 0 | 0 |
| CP7266 AX | 0 | 0 |
| CP7869 | 0 | 0 |
| CP7909 | 0 | 0 |
| KS Ahearn | 0 | 0 |
| KS Providence | 0 | 0 |
| LCS19DH-152-6 | 0 | 0 |
| LCS Atomic AX | 0 | 0 |
| LCS Galloway AX | 0 | 0 |
| LCS Steel AX | 0 | 0 |
| Crescent AX | 0 | 0 |
| Guardian | 0 | 0 |
| Kivari AX | 0 | 0 |
| Whistler | 0 | 0 |

We will report 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, so we advise producers to closely monitor their wheat pastures at this time.

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

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## 5. Wheat Variety Fall Forage Yield Comparison for 2022-23

Fall forage yield is an important aspect of dual-purpose wheat production. In this system, wheat is typically sown earlier than for grain only production, at higher seeding rates and with additional nitrogen fertilizer to maximize forage production.

The weather experienced during the fall is crucial to determine average level of forage yield, with warm and moist weather typically resulting in greater forage yield than cool and dry weather conditions. Management practices that also maximize forage yield are early sowing, higher seeding rates, placement of in-furrow phosphorus fertilizer with the seed at sowing, and fall nitrogen fertilization.

While the weather is typically the largest player in determining fall forage production, followed by management, there are also differences among wheat varieties in forage production potential. Every year, the K-State Wheat Production Group compares the forage yield of several commonly grown wheat varieties and upcoming lines. This test is usually performed in the South Central Experimental Field near Hutchinson, Kansas (Figure 1), and the forage sampling occurs sometime during December (Table 1).

At the sampling conducted late December 2022, there were significant differences among varieties in terms of forage accumulation. Average forage yield was extremely low (354 lb dry matter (DM)/a) and with a narrow range (from 213 to 679 lb DM/a). The varieties that exhibited the highest forage yield were Guardian and KS Ahearn (Table 1). The remaining varieties produced statistically less forage than these two. The extremely low forage yield was mostly function of limited rainfall availability, as the trial received enough precipitation for proper emergence but almost null precipitation subsequently between emergence and forage measurement (Figure 1).

**Figure 1. Dual-purpose wheat trial near Hutchinson, KS. The trial was sown on mid-September 2022, with 50 lbs DAP/acre applied in furrow. Weeds were controlled the week prior to sample collection thus control is still incipient in the photo above. Photo was taken late November 2022.**

**Table 1. Fall forage yield of wheat varieties sown under dual-purpose system near Hutchinson, KS. Forage biomass was collected on late December 2022. Data is shown in pounds of dry matter per acre (lbs DM/ac). There were significant statistical differences among varieties at the 5% probability level. Varieties are listed in alphabetical order and the bold highlight indicate highest forage yielding group.**

| Variety | lb DM/a |
|---|---|
| AM Cartwright | 330 |
| AP EverRock | 244 |
| AP Prolific | 459 |
| AP Roadrunner | 213 |
| AP18 AX | 304 |
| ARMOR EXP55 | 314 |
| ARMOR EXP6_AX | 384 |
| CP7017 AX | 283 |
| CP7050 AX | 351 |
| CP7266 AX | 335 |
| CP7869 | 403 |

| | |
|---|---|
| CP7909 | 304 |
| **Guardian** | **679** |
| Kivari AX | 375 |
| **KS Ahearn** | **489** |
| KS Hatchett | 314 |
| KS Providence | 333 |
| LCS Atomic AX | 436 |
| LCS Galloway AX | 440 |
| LCS Steel AX | 286 |
| LCS19DH-152-6 | 234 |
| Whistler | 274 |
| Average | 354 |
| Minimum | 213 |
| Maximum | 679 |

Another important aspect of dual-purpose wheat production is how long each variety can be grazed in the spring. This is measured as the date for first hollow stem, and varieties can differ in as much as 20-30 days in achieving first hollow stem in the spring. The Wheat Production Group at K-State uses this very same trial to measure first hollow stem during late February and early March, so stay tuned for more information to come.

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## 6. National Sorghum Yield Contest: A Summary for Kansas

The National Sorghum Yield Contest embraces four objectives:

- Improve sorghum yields across the country,
- Transfer knowledge between growers,
- Identify top sorghum producers in each state,
- Recognize growers for their outstanding yields.

This article contains information from the KSRE publication MF3615 *National Sorghum Yield Contest: A Summary for Kansas.* The full publication is available online at:
https://bookstore.ksre.ksu.edu/pubs/MF3615.pdf

**Results**

Five years of data were summarized (2013-2017) from the National Sorghum Yield Contest with a focus on Kansas entries. The data analyzed comprised a total of 175 observations from 38 counties (Figure 1). Most entries were for dryland fields (63%) with an average yield of 139 bushels per acre. For irrigated fields, the average water application was 8 inches, with a yield of 161 bushels per acre. Data entries were split in three groups (high, medium, and low) according to their yield values.

- The high-yielding group included values from 175 to 230 bushels per acre, with an average of 190 bushels per acre (n=32),
- The medium-yielding group included values from 125 to 175 bushels per acre, with an average value of 150 bushels per acre (n=101), and
- The low-yielding values ranged from 60 to 125 bushels per acre, with an average yield of 110 bushels per acre (n=42).

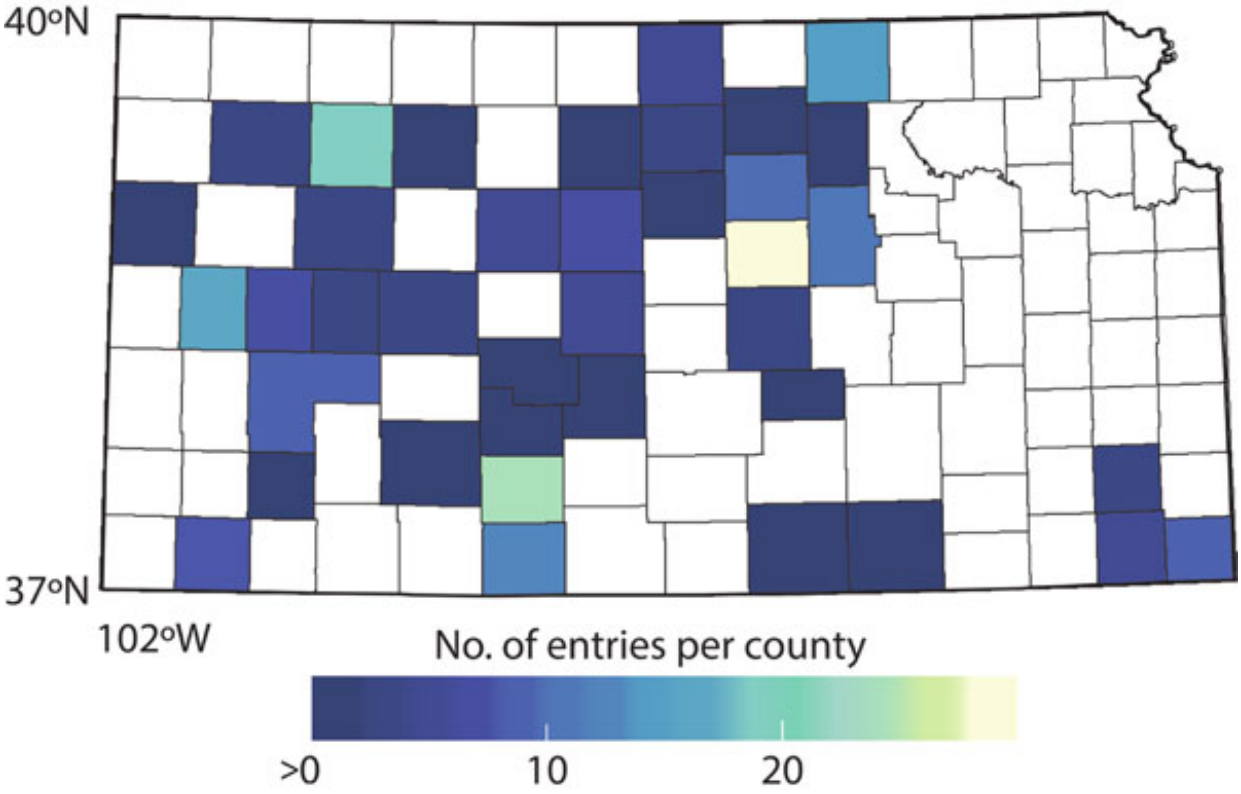


**Figure 1. Number of entries per county for the National Sorghum Contest between 2013 and 2017 for the state of Kansas.**

Grain yield reported by the National Agricultural Statistics Service from USDA for the sorghum yield from the same period (2013-2017) ranged from 59 to 91 bushels per acre. Thus, the data from the yield contest is roughly two-fold above the state average.

Conventional tillage presented similar frequencies across yield groups (Figure 2). The high-yielding group presented a large proportion of fields with reduced-till; yet this factor was not significant to explain the yield variations. Irrigated fields prevailed in the high-yielding group (72%; Figure 2), diminishing their frequency within the medium- and low-yielding groups (34 and 19%, respectively).

**Crop Management**

Management practices explained close to 80% of the yield variation. Irrigation was the factor accounting for a large proportion of the yield variation (21%), followed by nitrogen fertilization (18%), and changes in planting date (11%). Row spacing did not vary among yield groups (Figure 2). Most entries (88%) presented a row spacing of 30 inches. The remaining 12% had other variations with narrower rows (10 to 20 inches). No significant yield differences were observed relating to row spacing. High-yielding planting dates ranged from May 1 to June 1. A greater proportion of late-planting dates (after June 1) were found in medium- to low-yielding groups (Figure 2). No distinctive pattern was found regarding plant density among yield groups (Figure 2). Irrigated fields had higher seeding rates. Observations with nitrogen fertilization of less than 200 pounds per acre were the most frequent (n=126). These low nitrogen fertilization rates were less frequent in the high-yielding group (Figure 2), with the high-yielding group presenting a high frequency of high phosphorus rates (P>25 pounds per acre) and lowest proportion of no phosphorus fertilization (Figure 2).

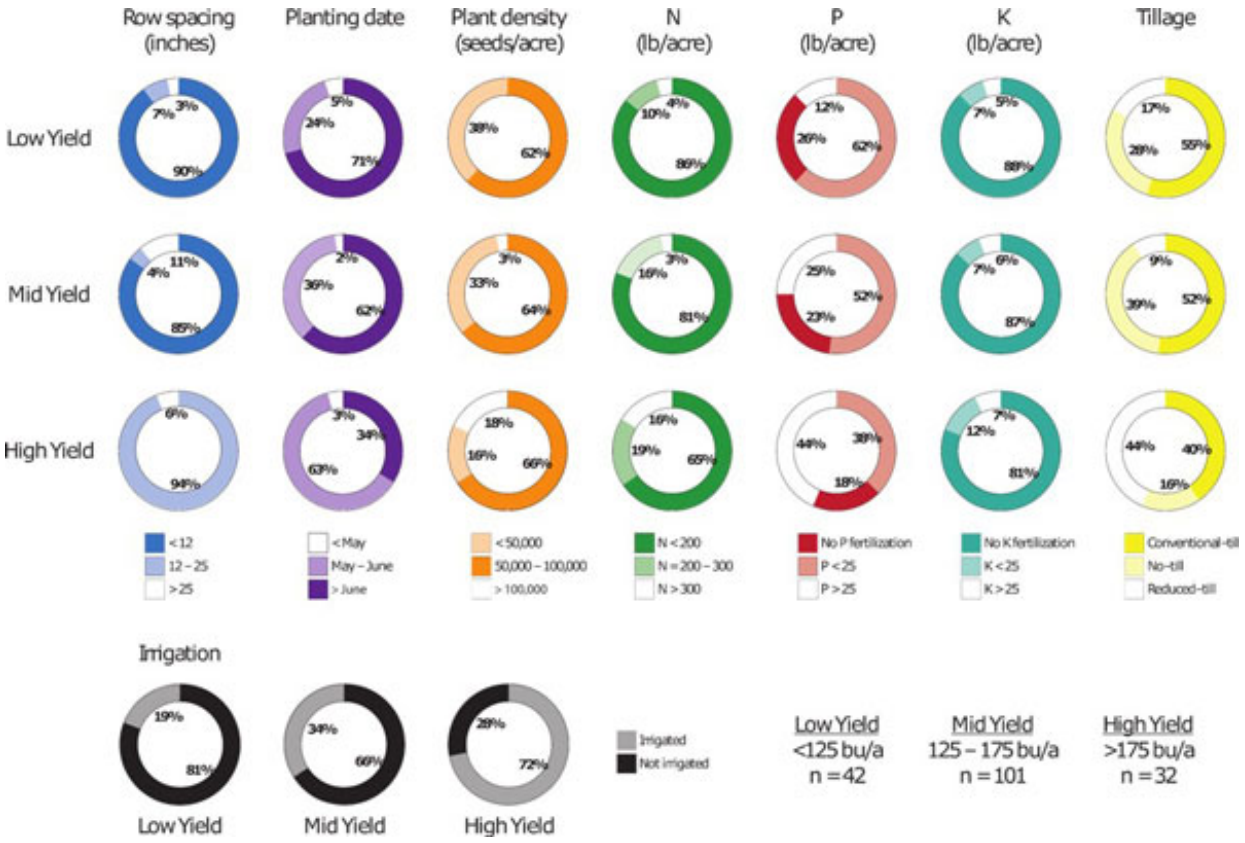


**Figure 2. Summary of crop management practices for the different yield groups. The high-yielding group ranged from 175 to 230 bushels per acre (n=32), medium-yielding group ranged from 175 and 125 bushels per acre (n=101), and low-yielding group ranged from 60 to 125 bushels per acre (n=42).**

**Summary**

The reported management practices implemented by farmers in the five years (2013-2017) analyzed from the National Sorghum Yield Contest impacted the sorghum yields in different magnitudes. The result of the study indicated that the use of irrigation and adequate nitrogen fertilization is critical to maximize sorghum grain yields in Kansas. In addition, planting before June was shown to be a relevant strategy to maximize sorghum yields across the different production regions.

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## 7. K-State Plant Disease Diagnostic Lab: Changes to Services and Fee Schedule

The K-State Plant Disease Diagnostic Lab has added new diagnostic services and updated the fee schedule. Fees for routine diagnoses, fescue endophyte, and all nematode services remain the same (Table 1). In order to maintain the quality of our services, some fees have increased in 2023. This is primarily due to increased costs of materials and labor, but is also a reflection of our new services.

**Table 1. K-State Plant Disease Diagnostic Lab Services and Fees**

| Diagnostic Service | Internal Charges (KSRE) | External Charges (non-extension) |
|---|---|---|
| Digital Diagnosis | $0 | $0 |
| Routine Diagnosis (per sample) | $10 | $13.50 |
| No routine diagnosis charge when running specialized tests listed below. | | |
| Fescue Endophyte | $25 | $35 |
| Nematode – Soybean Cyst Nematode | $25 | $35 |
| Nematode – Corn | $25 | $35 |
| Nematode – Pine Wilt | $25 | $35 |
| ELISA (wheat virus screen) | $50 | $70 |
| Molecular (first/single pathogen) | $50 | $70 |
| Molecular (each additional pathogen) | $20 | $30 |
| Alternate Lab Testing, cost recovery | Varies | Varies |

**ELISA fee has increased to $50 for extension and $70 for non-extension**

The K-State Plant Disease Diagnostic Lab uses ELISA (a protein-based diagnostic test) to screen for wheat viruses. Previously our lab tested for five pathogens in the screen, but added a sixth in 2023. The wheat viruses that we now screen for are Wheat Streak Mosaic Virus (WSMV), Triticum mosaic virus (TriMV- **new in 2023**), High Plains Wheat Mosaic Virus (HPWMoV), Wheat Spindle Streak Mosaic Virus (WSSWMV), Soil-borne Wheat Mosaic Virus (SBWMV), and Barley Yellow Dwarf Virus- PAV (BYDV-PAV). This testing **program begins the week of March 13**.

**New Molecular Service**

The K-State Plant Disease Diagnostic Lab is now offering molecular diagnostics. This type of diagnostic service increases the detection capabilities of our lab, which provides diagnoses that are more precise for our clients. Examples of molecular detection include Sudden Death Syndrome of soybeans (*Fusarium virguliforme*), Bacterial Leaf Streak of corn (*Xanthomonas vasicola* pv. *vasculorum* or Xvv), and others.

**Sample Submission** – High quality samples lead to high quality diagnoses (Figure 1)

- Collect and ship samples on or before Wednesday to avoid weekend storage

- Collect healthy and symptomatic plants (labeled)
- Collect the entire plant
    - Dig up plant to keep the root system intact
    - Bag roots separately to avoid contact with leaves
    - Place bagged roots and above ground materials in larger plastic bag
- Label and use plastic bags instead of paper and do NOT add water. This maintains sample integrity

- Once collected:
    - Fill out submission form with as much information as possible. Include variety/hybrid info (especially for wheat)
    - Ship plants ASAP overnight via UPS or FedEx when possible. USPS can take up to 14 days
- Send photos to clinic@ksu.edu with tracking number or date shipped
    - 3 types of images
        - Symptom/problem close up and in focus
        - Entire plant from ground level to top of plant
        - Site – capture the pattern in the field; transition areas, terraces, etc.

**Figure 1. Example of following good sample collection and shipping procedures (left photo) versus bad sample collection and shipment (right photo).**

**Summary:**

- High quality samples lead to a high quality diagnoses
- New Services
    - Molecular diagnosis (increased detection capability)
        - Sudden Death Syndrome
        - Bacterial Leaf Streak of Corn
    - Triticum mosaic virus (TriMV) added to wheat virus screen (ELISA)
- Wheat Virus Screen (6 viruses – WSMV, **TriMV**, HPWMoV, WSSMV, SBWMV, BYDV-PAV)
    - 2023 program starts Week of March 13
        - Submit samples before 5pm on Wednesdays

- $50 for extension clients
- $70 for non-extension clients

If you have any questions, comments or concerns, please reach out to us via clinic@ksu.edu or 785-532-6716.

Chandler Day, K-State Plant Disease Diagnostic Lab
chandlerday@ksu.edu

## 8. Soil Pit Field Day set for March 24

A farmer-led Soil Pit Field Day is set for March 24 from 10:00 am to 2:00 pm near Westmoreland, Kansas. Participants will visit three soil pits on three differently managed field to answer the question, "What is really going on down there?". Featured speakers include Dr. DeAnn Presley, K-State soil management specialist, and Will Boyer, K-State watershed specialist.

In the event of inclement weather, the alternate date is April 7. Please dress for the weather as you will be outside for the day. Bring your own chair if needed in the field.

The soil pit locations/farmers are:

**First location**: Wyatt Peverley
12200 Repp Road, Westmoreland

**Second location**: Steve Frank (see below for address)

**Third location**: Kenny Duncan
Park at 12195 Honeysuckle Road, Westmoreland, for the second and third location

The soil pit portion of the event will take place from 10:00 am to noon. Beginning at noon, a lunch will be provided at 12520 Honeysuckle Road. There will be an open discussion about soil health, cover crops, and more until the event concludes at 2:00 pm.

For an accurate meal count, please RSVP to Megan Rush at 913-204-0179 or megan.rush@kaws.org

# WHAT IS REALLY GOING ON DOWN THERE?

## FARMER LED SOIL PIT FIELD DAY WORKSHOP

K-STATE Research and Extension | Middle Kansas | WRAPS

## MARCH 24TH, 2023
## 10AM -2PM

**RAIN DATE APRIL 7TH, 2023**

We will be going to three soil pits on three differently managed fields to answer the question, *'What is really going on down there?'*

Featuring:
Dr. DeAnn Presley, KSU Soil Scientist
Will Boyer, KSU Watershed Specialist

**10am-12pm**
**First Location** - Wyatt Peverley 12200 Repp Rd Westmoreland
**Second Location** - Steve Frank
**Third Location** - Kenny Duncan
Park at 12195 Honeysuckle Rd Westmoreland for second and third location.

**12pm-2pm**
Lunch at 12520 Honeysuckle Rd
We will have open discussion about soil health, cover crops, and much more, that is farmer led.

Please dress for the weather as we will be outside for the day. Please bring your own chair if needed in the field.

## RSVP TODAY!

**Please RSVP for a meal count**
**Megan Rush, Middle Kansas River WRAPS Watershed Coordinator**

913-204-0179 Call or text

megan.rush@kaws.org

HTTPS://KAWS.NETWORKFORGOOD.COM/EVENTS/54011-WHAT-IS-REALLY-GOING-ON-DOWN-THERE

**LUNCH PROVIDED BY** MKC *Shared growth. Shared success.*

## 9. Wheat Rx Schools scheduled for early March

The dates and locations have been set for two Wheat Rx Schools to be held in early March. The first event will take place on March 7 in McPherson. The second seminar is scheduled for March 8 in Russell. Wheat Rx is a partnership between Kansas Wheat Commission and K-State Research and Extension to disseminate the latest research recommendations for high-yielding and high-quality wheat to Kansas wheat farmers.

These two Wheat Rx schools will have speakers sharing the most up-to-date wheat research information on how to manage your wheat crop not only for yield but also for quality and sustainability, as well as industry partners sharing how growers can capitalize on high protein wheat.

Registration for the event is $110 for non-members of the Kansas Association of Wheat Growers. However, members (including new members) will receive one free registration. Lunch and meeting materials are included with the registration fee.

Online registration is open at https://kswheat.com/wheat-rx-registration-page

**2023 Wheat Rx Schools**

- March 7 – 9:00 am to 1:00 pm (registration begins at 8:30 am)
  McPherson Opera House – Grand Ballroom
  216 S Main Street
  McPherson, KS 67460

- March 8 - 9:00 am to 1:00 pm (registration begins at 8:30 am)
  Fossil Creek Hotel and Suites
  1430 South Fossil Street
  Russell, KS 67665

**Speakers and topics include:**

- Welcome and Introduction to Wheat Rx - Aaron Harries, Vice President of Research and Operations
- Capturing Value for High-Quality Wheat - E.G. Herl, Vice President - Grain & Logistics, Grain Craft
  and Reuben McLean, Sr. Director of Quality & Regulatory, Grain Craft (McPherson school only)

- Breeding bread wheat for yield and quality - Dr. Brett Carver, Regents Professor, Wheat Breeding and Genetics, Oklahoma State University
- How sustainable is intensive wheat management in the Great Plains? - Dr. Romulo Lollato, Associate Professor, KSU
- Beyond grain: the value of wheat in the production system - Luana Simão, PhD candidate, KSU
- CASH: Cover crops, Agronomy, and Soil health - Carlos Bonini Pires, PhD candidate, KSU

Romulo Lollato, Wheat and Forages Specialist
lollato@ksu.edu

## 10. K-State Crop School on growing crops in volatile conditions - March 8 in Wamego

Growing Crops in Volatile Conditions will be the focus of a crop school sponsored by K-State Research and Extension - Pottawatomie County on Wednesday, March 8, 2023, from 1:30 pm – 7:00 pm, at the First Presbyterian Church, 601 Elm St, Wamego.

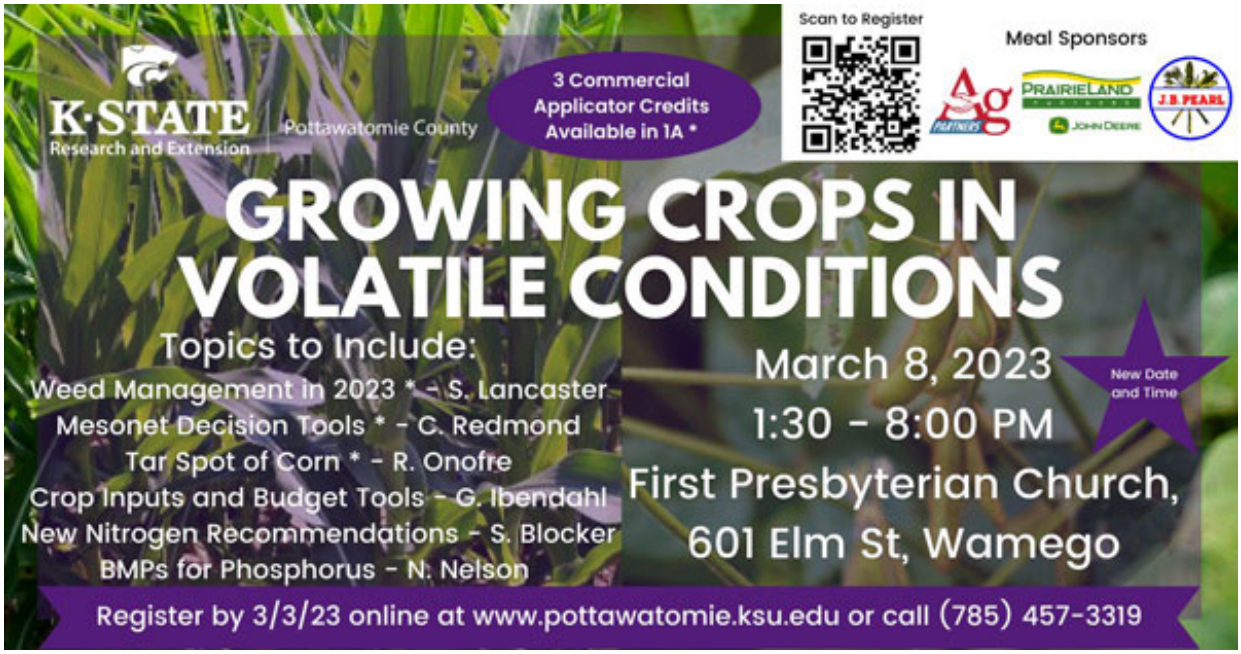
Presentations will include:

- **Weed Management in 2023** - Sarah Lancaster, K-State Extension Weeds Specialist
- **Tar Spot of Corn: A New Threat to Kansas Corn** - Rodrigo Onofre, K-State Extension Row Crops Pathologist
- **Mesonet Decision Tools and Climate Outlook** - Chip Redmond, K-State Mesonet Manager
- **Best Management Practices for Reducing Phosphorus Loss** - Nathan Nelson, K-State Soil Fertility professor
- **Crop Inputs and Budget Tools** - Gregg Ibendahl, K-State Extension Crop Ag Economist
- **New Nitrogen Soil Test Recommendations for Corn** - Shannon Blocker, Pottawatomie County Agriculture and Natural Resources Extension Agent

The first three presentations are each eligible for one hour of continuing education credit in 1A for commercial pesticide applicators.

A meal is sponsored by Ag Partners Cooperative, J.B. Pearl, and Prairieland Partners. Please register by March 3, 2023, online at www.pottawatomie.ksu.edu by clicking the registration link. You may also call the Pottawatomie County Extension Office at 785-457-3319.

K-State Research and Extension is an equal opportunity provider and employer. 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, vision or hearing disability, please contact Shannon Blocker at 785-457-3319 by March 3, 2023. US Department of Agriculture is an equal opportunity provider and employer.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3 Commercial Applicator Credits Available in 1A *
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Meal Sponsors
PRAIRIELAND
JOHN DEERE
J.B. PEARL
GROWING CROPS IN VOLATILE CONDITIONS
Topics to Include:
Weed Management in 2023 * - S. Lancaster
Mesonet Decision Tools * - C. Redmond
Tar Spot of Corn * - R. Onofre
Crop Inputs and Budget Tools - G. Ibendahl
New Nitrogen Recommendations - S. Blocker
BMPs for Phosphorus - N. Nelson
March 8, 2023
1:30 - 8:00 PM
First Presbyterian Church,
601 Elm St, Wamego
New Date and Time
Register by 3/3/23 online at www.pottawatomie.ksu.edu or call (785) 457-3319