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Research and Extension

## Extension Agronomy

# eUpdate

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*04/16/2026*

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. Causes of Yellow Wheat – Weather and Disease Factors

Wheat producers may start seeing some wheat fields turn yellow during this time of the year. The pattern may vary from field to field, sometimes as large areas, small patches, or streaks of yellowish wheat in some fields this spring. What are some of the main weather and disease-related factors that can cause yellow wheat in the spring? A companion article in this eUpdate issue provides more information on poor root growth associated with soil factors.

**Poor root growth.** Many potential causes exist for reduced root growth: dry soils, later sowing, waterlogging, or elevated crown height caused by shallow planting depth or excessive residue in the root zone (Figure 1). If the plants have a poor root system, their roots are not extensive enough to access sufficient water and nutrients, leading to yellowing.



**Figure 1.** The left panel shows the lack of development of the crown rooting system of a wheat field due to drought conditions in the topsoil. Photo by Romulo Lollato, K-State Extension. The right panel shows a slightly more developed but also extremely shallow rooting system, likely due to a restrictive dry topsoil layer. Photo by Tyler Ediger, wheat producer in Meade County, KS.

**Cold weather injury at the tillering stage.** A sudden drop in temperature after the wheat has greened up but before it reaches the jointing stage will burn back the top growth, often giving the field a yellowish cast but not necessarily reducing yield potential (Figure 2). This injury is likely cosmetic, provided the growing point is still healthy. Variety release from winter dormancy can also affect the extent of the symptoms, as early varieties would have been less cold-hardy and thus likely sustain more injury.



**Figure 2. Yellowing wheat from cold weather injury at the tillering stage. The wheat variety on the left (WB-Grainfield) has a later release from winter dormancy than WB-Cedar (on the right). Thus, WB-Cedar sustained more leaf injury. Photo by Romulo Lollato, K-State Extension.**

**Freeze injury at the jointing stage.** Jointing wheat usually tolerates temperatures in the mid- to upper 20s without significant injury. But, if temperatures fall into the low 20's or below for several hours, the lower stems, leaves, or developing heads can sustain injury (Figure 3). This could be the case this year due to the advanced crop development and the cold temperatures experienced in mid-March 2026. Producers are advised to scout their fields to assess yield potential 10-14 days after the freeze. If the leaves of tillers are yellowish when they emerge from the whorl, this indicates that those tillers have been damaged. More information on assessing wheat for signs of injury can be found in this recent eUpdate article: <https://eupdate.agronomy.ksu.edu/article/wheat-status-injury-symptoms-from-freeze-damage-687-4>.



**Figure 3. Comparison between a healthy developing wheat head (left-hand side, typically light green and firm) versus a developing wheat head that sustained freeze injury (right-hand side, whitish/brown and mushy). Photo by Romulo Lollato, K-State Extension.**

While the extent of potential freeze damage depends on minimum temperatures achieved, duration of cold temperatures, and stage of wheat development, other factors such as crop residue, position on the landscape, wind speed, snow cover, and soil temperatures also play a role. Figure 4 shows an example of the effect of heavy residue on potential wheat damage. In this photo, parts of the field with a heavier layer of residue show greater cold damage than lighter residue. This can be partially explained because, under a thicker layer of residue, the wheat crown tends to form closer to the surface and, therefore, is more exposed to freezing temperatures.



**Figure 4. Effect of soil residue on wheat freeze damage. Wheat shows more damage from freezing temperatures in thicker residue layers. Photo by Tyler Ediger, a wheat producer in Meade County, KS.**

**Leaf senescence and opportunistic leaf spotting diseases.** After the winter, it is normal for some of the leaves in the lower canopy to go through senescence and perish, sometimes translocating nutrients to the new growth, and sometimes just due to different natural reasons. This causes the lower wheat canopy to yellow. Some opportunistic saprophytic fungi or fungal diseases, such as leaf spots (*Septoria tritici* blotch, *Stagonospora nodorum* leaf blotch, and tan spot), may colonize these dying tissues, as shown in Figure 5. For the most part, in Kansas, these diseases do not cause economic damage as long as they remain on the lower leaves, especially if they occur in tissue already dying. They might become a problem and warrant a fungicide application in specific situations, such as when a susceptible variety is planted into heavy wheat residue – especially under no-tillage practices, and when symptoms appear in the upper canopy after the flag leaf has emerged (see *Stagonospora nodorum* leaf blotch, in Figure 6).



**Figure 5. *Septoria tritici* blotch (leaf spot) colonizing tissue from the lower wheat canopy that was already senescing. Photo by Romulo Lollato, K-State Extension.**



**Figure 6. *Stagonospora nodorum* leaf blotch symptoms in the upper wheat canopy. Photo by Romulo Lollato, K-State Extension.**

**Soilborne mosaic or spindle streak mosaic.** Soilborne mosaic and spindle streak mosaic (Figure 7) are viral diseases that occur primarily in eastern and central Kansas but are rare in western Kansas. These diseases are most common in years with a wet fall followed by a cool, wet spring. These diseases are often most severe in low areas of the field where soil conditions favor infection. Symptoms are usually most pronounced in early spring, then fade as temperatures warm. Leaves will have a mosaic of green spots on a yellowish background. Infected plants are often stunted in growth. Many varieties in the eastern part of the state have high levels of resistance to these viral diseases.



**Figure 7. Wheat with symptoms of wheat spindle streak mosaic. Notice the yellow, linear lesions that are tapered at both ends. Photo by Erick DeWolf, K-State.**

#### **Wheat streak mosaic complex.**

The viruses that cause wheat streak mosaic complex (Figure 8) need no introduction in many parts of Kansas. Wheat streak mosaic is one of the most economically devastating wheat diseases in the state. While this disease is most common in western Kansas, we have seen an uptick in its frequency in central and eastern Kansas over the last couple of years.

This disease complex can be caused by several viruses, including *wheat streak mosaic virus*, *triticum mosaic virus*, and *wheat mosaic virus (high plains)*. These viruses are moved around by the tiny wheat curl mite, which survives between seasons on volunteer wheat and other grassy hosts. Infections can occur in the fall or spring, but can result in more severe yield loss when they occur in the fall after planting. Wheat streak mosaic symptoms develop most rapidly at temperatures above 70°F. We often see symptoms appear when temperatures warm in the spring. Symptoms appear as green and yellow streaks on wheat leaves. Some varieties have limited resistance to these viruses. More info on how your varieties stack up against this complex of viruses can be found in the *Kansas Wheat Variety Guide*: <https://bookstore.ksre.ksu.edu/pubs/MF3383.pdf>.



**Figure 8. Typical symptoms of wheat streak mosaic virus. Photo by Kelsey Andersen Onofre, K-State Extension.**

**Barley yellow dwarf.** This viral disease is vectored by bird cherry oat aphids and greenbugs. Small or large patches of yellow plants will occur, typically around the boot stage (Figure 9). The leaf tip turns yellow or purple, but the midrib remains green. The yellowing caused by barley yellow dwarf is less botchy than the yellowing caused by other viral diseases. Plants infected by barley yellow dwarf are often stunted.



**Figure 9. A typical patch of plants showing symptoms of barley yellow dwarf virus infection. (Photo by Romulo Lollato, K-State Extension) as well as up-close symptoms of barley yellow dwarf (Photo by Kelsey Andersen Onofre, K-State Extension)**

When in doubt, wheat samples can be submitted to the K-State plant disease diagnostic lab (<https://www.plantpath.k-state.edu/extension/plant-disease-diagnostic-lab/>). As a reminder, good sample submission and fast shipping (not USPS) are keys to a good diagnosis. Any questions about sample submission can be directed to [clinic@ksu.edu](mailto:clinic@ksu.edu) or 785-532-6176. More details about sample shipment can be found in this article: <https://eupdate.agronomy.ksu.edu/article/k-state-plant-disease-diagnostic-laboratory-fee-adjustments-634-7>.

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## 2. Causes of Yellow Wheat – Soil Fertility Factors

Wheat producers may start seeing some wheat fields turn yellow during this time of the year. The pattern may vary from field to field, sometimes as large areas, small patches, or streaks of yellowish wheat in some fields this spring. What are some of the main causes related to nutrients and soil fertility for yellow wheat in the spring? A companion article in this eUpdate discusses disease and weather factors that may be associated with yellow wheat.

**Nitrogen deficiency.** As the crop starts to grow in the spring, its nitrogen (N) demand increases. It is common to see N deficiency, especially when the temperatures are lower, and little N is mineralized from the soil organic matter. Nitrogen deficiency causes an overall yellowing of the plant, with the lower leaves yellowing and dying from the leaf tips inward (Figure 1). Nitrogen deficiency also reduces tillering, top growth, and root growth. The primary causes of N deficiency are insufficient fertilizer rates, application problems, applying the nitrogen too late, leaching from heavy rains, denitrification from saturated soils, and the presence of heavy amounts of crop residue, which immobilize nitrogen. Dry soils, such as most of the wheat-growing areas in Kansas this year, can limit crop N uptake. Therefore, it is not uncommon for nitrogen deficiency to occur together with drought stress symptoms.



**Figure 1. Nitrogen deficiency in wheat. The lower leaves are the first to become chlorotic (yellow). Photo by Dorivar Ruiz Diaz, K-State Extension.**

**Sulfur deficiency.** Like nitrogen, the crop's sulfur requirement increases in the spring as it takes off on reproductive growth. Due to a historical decrease in sulfur deposition in the rainfall, there has been an increasing number of fields with sulfur deficiency symptoms in Kansas in recent years. Deficiencies can be more common in areas where organic matter levels are low -- especially on sandier soils or eroded areas of a field. Sulfur deficiency can also occur when soils are cold in the spring due to a reduced rate of sulfur release from organic matter.

The symptoms of sulfur deficiency are very similar to nitrogen deficiency. However, sulfur deficiency differs from N deficiency in that the whole plant is pale, with a greater degree of chlorosis (yellowing of plant tissue) in the young/upper leaves (Figure 2). The pattern of chlorosis may show gradation in intensity, with the younger leaves at the tip yellowing first because sulfur is not easily translocated within the plant. However, the entire plant can quickly become totally chlorotic and take on a light yellow color. Symptoms often become more pronounced when plants begin growing rapidly, while soil conditions are such that organic matter mineralization and sulfur release rates are low. Symptoms may disappear as the temperature warms up and moisture conditions improve, which increases the rate of mineralization of sulfur from organic matter and the rate of root growth.

Drought stress can also lead to sulfur deficiency for two reasons. First, with drought stress, there is less organic matter mineralization, reducing S release from the organic matter to the crop. Second, similarly to nitrogen, sulfur is taken up by the plants together with water. Therefore, we may observe some drought-induced sulfur deficiency this year.



**Figure 2. Sulfur deficiency in wheat, with symptoms appearing first on the younger leaves.**  
**Photo by Romulo Lollato, K-State Extension.**

**Low pH and poor root growth.** Many potential causes exist for reduced root growth: dry soils and later sowing are common situations this year. Root damage due to aluminum toxicity in acidic soils can also result in multiple deficiency symptoms and poor growth (Figure 3). Strongly acidic soils may present several problems for wheat production. These include the combination of aluminum toxicity and phosphorus, calcium, magnesium, and molybdenum deficiencies. These problems caused by acid soils are difficult to separate from one another and are often related to root damage due to Al toxicity. In general terms, aluminum toxicity will reduce the yield potential of wheat when soil pH levels get below 5.2 to 5.5, and KCl-extractable (free aluminum) levels are greater than 25 parts per million (ppm).

Typically, these symptoms become apparent in early spring and are exacerbated by drought, such as this spring. Although the wheat crop may recover from this condition with sufficient moisture, the impact on yields may already be evident. A corrective measure will require a lime application for the next crop.



**Figure 3. Wheat growing on very acidic soils, such as this soil in Harper County with a pH of 4.6, is often spindly and has poor vigor. Photos by Dorivar Ruiz Diaz, K-State Extension.**

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### 3. 2026 Kansas Wheat Plot Tours: May 11-May 15

The Department of Agronomy and K-State Research and Extension will host several winter wheat variety plot tours in different regions of the state starting May 11, 2025. Please make plans to attend a plot tour near you to see and learn about the newest available and upcoming wheat varieties, their agronomics, and their disease reactions. Below is a list of plot tour dates for May 11 through May 15, times, and locations with directions. This list will be continually updated in the coming weeks.

#### May 11 – Monday

Time	County	Location/Town	Agent	Directions
8:30 AM	Harper	Harper	Jenni Carr	South of Harper. 1½ mile west of K2 on US 160.
6:00 PM	Pratt	Pratt	Jenna Fitzsimmons	2 miles west and ½ mile south of BTI-Pratt.

#### May 12 – Tuesday

Time	County	Location	Agent	Directions
11:00 AM	Barber	Isabel	Justin Goodno	North of Isabel on the intersection between Main Street and SE 120th St.
5:00 PM	Barber	Kiowa	Justin Goodno	May Precision Ag: 126 S 7th, Kiowa, KS 67070

#### May 13 – Wednesday

Time	County	Location	Agent	Directions
11:00 AM	Kingman	Spivey	Grace Schneider	Bock Seeds Test Plot: 7681 SW 80 Ave, Kingman, KS 67068
8:30 AM	Barton	Great Bend	Stacey Campbell	West Barton Co Rd & NW 50 Ave
5:00 PM	Edwards	Kinsley	Baley Dogett	Head 2 miles west out of Kinsley on L Road then north 1.75 miles on 70th Ave.
6:00 PM	Ellis	Hays	Stacey Campbell	Hays Ag Research (Ct. So 1232 240th Ave. From office, go south on the east side of blacktop road)

#### May 14 – Thursday

Time	County	Location	Agent	Directions
10:00 AM	Kiowa/Comanche	County line	Madi Ary and Levi Miller	1 mile south of the Kiowa/Comanche County Line on the west side of HWY 183.
11:00 AM	Ellsworth	Lorraine	Craig Dinkel	2 miles west of Lorraine on Ave W west of 8th rd on the north side of the road GPS coordinates 38.55120 N

				- 98.35416 W
11:30 AM	Harvey	Newton	Alex Atchinson	435-471 E Dutch Ave, Newton, KS 67114
5:00 PM	Reno	Buhler	Patrick Bergkamp	½ mile south of the corner of Rayl Rd. and East 69 <sup>th</sup> Av. Meal at 5:30
6:00 PM	Pawnee	Larned	Kyle Grant	From Larned, go north on Toles Ave. 5 miles north, ½ mile east, and ¼ mile north. Plot is on the east side of the road.

### May 15 – Friday

Time	County	Location	Agent	Directions
8:30 AM	Dickinson	Abilene	Bret Toews	Take 15 Hwy straight south of Abilene, the plot is just north of 1100 <sup>th</sup> Ave.
11:30 AM	McPherson	Galle	Shad Marston	23rd Ave and Cheyenne Rd, just north
3:30 PM	McPherson	Inman	Shad Marston	1/4 mile east of 4th Ave and Cheyenne Rd.

Plots tours scheduled after May 15 are being finalized, and details will be updated soon. Stay tuned to the eUpdate for any changes to this schedule.

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#### 4. Alfalfa Stand Performance Issues: Symptoms and Management

Several reports have been received of alfalfa stands, ranging from new seedings to established fields, not performing as expected. In many cases, symptoms are not uniform within the same field, with patches of healthy plants occurring alongside areas of poor growth (Figures 1 and 2). This article highlights common visual symptoms, what they may indicate, and potential management strategies.



**Figure 1. Alfalfa field showing yellowing areas with patches of green, healthy plants. Photo by Rod Schaub, Frontier Extension District.**



**Figure 2. Healthy alfalfa plant (on the far left) with stunted plants from the same field. Photo by Rod Schaub, Frontier Extension District.**

### **Planting depth and seedbed**

Alfalfa seed is very small, with a narrow planting depth margin of error. Alfalfa seed should end up about  $\frac{1}{4}$  to  $\frac{1}{2}$  inch below the soil surface, with the highest success when drilled. If the seed were placed on the surface of a firm, mellow seedbed and pressed with a roller or press wheel, this should have positioned the seed correctly within the soil. But if the seed is more than  $\frac{3}{4}$ -inch deep, it probably won't emerge well. Seeds that remain on the soil surface may germinate, but the seedlings will be weak, especially in broadcast situations.

### **Dry soils**

Seed can be planted into moisture and emerge even if there is no rain after planting. However, alfalfa seed is planted in the very top half-inch of soil, which is almost always dry at the time of planting and lacks sufficient moisture to germinate. As a result, in most situations, alfalfa seed requires rain after planting to germinate and emerge. For best stand establishment, soils should have adequate moisture at about 1 to 3 inches below the soil surface so that seedlings can survive even if the seed germinates from only a very light rainfall.

### **Poor quality seed**

Poor emergence can be caused by using seed with low germination, though this is almost never a problem with certified seed and germination testing. Therefore, it is important to use certified seed with a high germination rate and purity to improve the chances of successful establishment.

### **Seedling diseases**

Several fungi (and oomycetes), including Phytophthora, Pythium, Fusarium, and Rhizoctonia, can attack alfalfa seedlings in Kansas. Traditionally, Phytophthora and Pythium have been considered the primary pathogens in the state. Seedling diseases may be the cause when emergence is poor and/or there are obviously stunted, discolored, or dead seedlings in a newly established stand. Alfalfa seedling diseases are more severe when soils are cool and wet for extended periods. Planting high-quality seed when conditions are favorable for rapid germination and growth is important in reducing losses to seedling pathogens.

Using varieties that are resistant to Phytophthora is your best bet for avoiding this disease. However, the resistance genes may not be expressed when the plants are very small, and it is a good idea to protect the seed treatment with a fungicide seed treatment labeled for Pythium and Phytophthora.

### **Poor seed inoculation and subsequent nitrogen deficiency**

Unless the seed is pre-treated with an inoculant, alfalfa must be treated with a rhizobium inoculant that is specific to alfalfa. If the seed was inoculated but the seedlings are still chlorotic, it may be because the inoculant died during storage. Heat, direct sunlight, and drying can all affect rhizobia's survival. Inoculants should be frozen or stored in a cool place. Prolonged storage can also reduce the viability of rhizobium.

About 10-20 lbs per acre of soil nitrogen is needed for seedlings to develop leaves and roots while the rhizobium is becoming established in the roots. Usually, there is sufficient soil nitrogen available in the type of good soils into which alfalfa is typically planted. But on poorer soils, or in no-till systems, the early-season chlorosis may be caused by nitrogen deficiency. If the seed was properly inoculated and the soil pH is not low, the plants should grow out of this before winter.

### **Low soil pH**

If seedlings are weak, poorly nodulated, or appear nitrogen-deficient, check the soil pH for acidic conditions. Low soil pH hinders the development of a healthy root system, which is crucial for drought tolerance, winter survival, and carbohydrate storage in alfalfa. Acidic conditions also suppress root nodulation and nitrogen-fixation by the bacteria (rhizobia) in the nodules. Alfalfa is very sensitive to acidic soils; thus, lime should be applied if the soil pH is less than 6.5. Low soil pH should be corrected before planting a new stand because lime moves slowly through the soil and

reacts more slowly than most fertilizers.

### **Herbicide carryover**

Sulfonylurea herbicide carryover can result in severe stunting of new alfalfa seedlings.

### **Allelopathy**

If alfalfa is seeded into an old alfalfa stand, the new seed will emerge, but the seedlings often have poor early vigor and eventually die. That's why it is important not to plant alfalfa immediately after alfalfa. After terminating an old stand, it is recommended to wait one year, planting annual forages or grain crops during that time, to minimize allelopathy issues in alfalfa.

### **Sulfur and boron deficiency**

Sulfur is essential for protein synthesis in plants, and with legumes, it is necessary for nodule development. Sulfur deficiency symptoms in alfalfa include a light green coloration of the whole plant, stunting, limited shoot development, and reduced nodulation. This deficiency is more common in fields with sandy soils, low organic matter, when springtime conditions are cool and wet.

Boron is a micronutrient that alfalfa needs for production. Boron deficiency symptoms include small, yellowish to reddish leaves bunched in the top trifoliates, purplish to reddish leaf discoloration increases from the leaf edges and tip, and yellowish symptoms at the plant top are known as "yellow top." Additional symptoms include delayed maturity, stunting, growing point death, bud discoloration, and lack of flowering or seed production.

Plant tissue tests can be useful for confirming suspected boron or sulfur deficiencies. The whole plant (above ground) should be collected once 6 inches of new growth has occurred.

### **Insects**

Alfalfa weevil damage has already begun in Kansas. Due to the mild winter, increased vigilance is warranted. Regular and timely scouting of alfalfa fields is essential to minimize potential losses in both forage yield and quality.

Aphid activity was reported in several areas earlier than normal. The aphids reported were mainly pea aphids, which can cause yellowing and stunting of plants but are usually kept below threshold by beneficial insects. Later in the season, spotted alfalfa aphids can cause yellow patches due to a toxin they transmit to the plants. Even low numbers of this insect (1 or 2 per seedling) can cause significant damage to alfalfa seedlings and should be controlled. The blue alfalfa aphid, active mainly earlier in the season, can be just as damaging to new alfalfa seedlings, but this insect does not cause yellowing.

Looking ahead to fall, foliar-feeding insects should be monitored. These include grasshoppers, cutworms, yellow-striped armyworm, corn earworm, fall armyworm, and alfalfa webworm. These insects can quickly destroy all plant tissue above the soil surface. Cutworms are an especially serious threat under dry fall conditions. The army cutworm feeds at or below the soil surface, cutting or defoliating plants. Infestations of 2-3 worms per square foot and 3-7 grasshoppers per square yard can be used as a general threshold in seedling alfalfa.

## Take-Home Message

- Poor alfalfa performance has been reported in Kansas, with patches of healthy and stressed plants.
- Multiple factors may be involved, including planting conditions for new stands, soil moisture, fertility, pests, and diseases.
- Accurate diagnosis through field scouting is critical before making management decisions.
- Addressing underlying issues early can help improve stand productivity and longevity.

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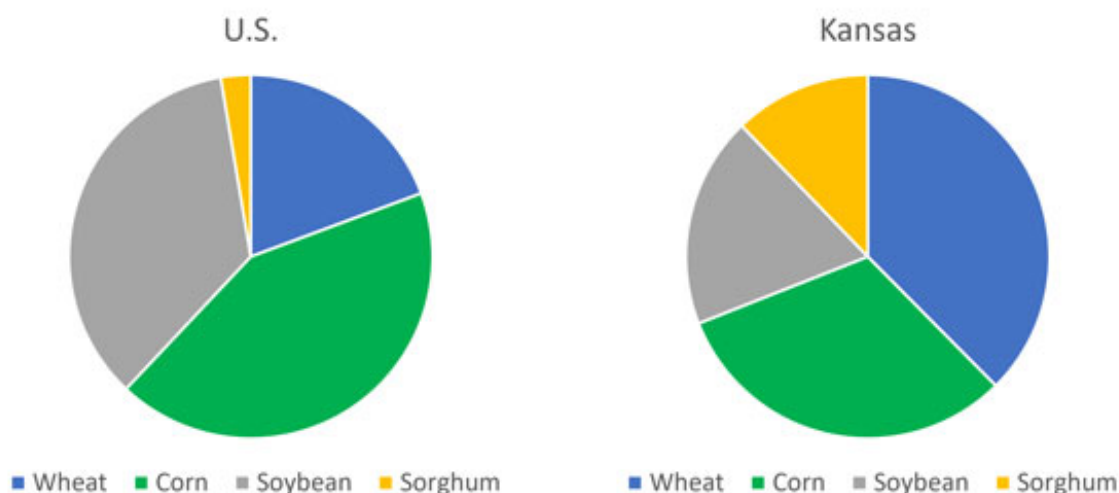
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## 5. Herbicide-Tolerant Sorghum Options for Kansas in 2026

Postemergence weed control in sorghum, especially grass weeds, has always been limited compared to many of our commonly grown crops. Although sorghum is a major crop in Kansas, the acreage planted nationwide is considerably less than for corn, soybeans, or wheat (Figure 1). Consequently, herbicides used in sorghum must often be registered in other crops in order to be economically practical for chemical companies. However, herbicide-resistant sorghum hybrids have been developed to help producers manage weeds. This article discusses the three herbicide-resistant sorghum technologies available in Kansas in 2026.



**Figure 1. Proportions of the four largest crops planted in the U. S. and Kansas in 2025. Graphs based on acreage reported to the Farm Service Agency.**

### Inzen grain sorghum and Zest herbicide

Grain sorghum containing the Inzen tolerance trait may be sprayed postemergence with Zest (nicosulfuron) herbicide. Pioneer has two hybrids available for Kansas in 2026: 85Z65 (70 RM, red grain, suited for high-yield environments) and P88Z153 (61 RM, red grain, suited for a range of yield environments).

Zest, a Group 2 herbicide in the sulfonyleurea family, inhibits the ALS enzyme. Due to the widespread use of Group 2 herbicides in the past, several problematic weeds have developed resistance to this herbicide group. In Kansas, these include kochia, Palmer amaranth, common sunflower, and waterhemp. Zest has limited activity against broadleaf weed species but provides good to excellent control of foxtails, barnyardgrass, fall panicum, and witchgrass.

- Apply Zest when sorghum is 4 to 20 inches tall, but before weeds reach the maximum height listed on the label. Application rate is 0.67 to 1.33 oz/a, and may be applied twice per year, provided the total amount of product does not exceed 1.8 oz.

- Always include nonionic surfactant (NIS) at 0.25 to 0.5% v/v or crop oil concentrate (COC) at 1.0 to 2.0% v/v. Use the higher rates of these surfactants when applying in dry conditions.
- A nitrogen source [ammonium sulfate (AMS) or urea-ammonium nitrate (UAN)] at 2 lb/a or 2 qt/a will also enhance efficacy with Zest. Do NOT apply in 100% UAN carrier.
- Do NOT mix Zest with Huskie (pyrasulfotole + bromoxynil) herbicide or use COC when mixing Zest with 2,4-D or dicamba.

A complete list of stewardship practices for Inzen grain sorghum can be found at <https://www.corteva.com/trait-stewardship.html>

### **Igrowth sorghum and ImiFlex herbicide**

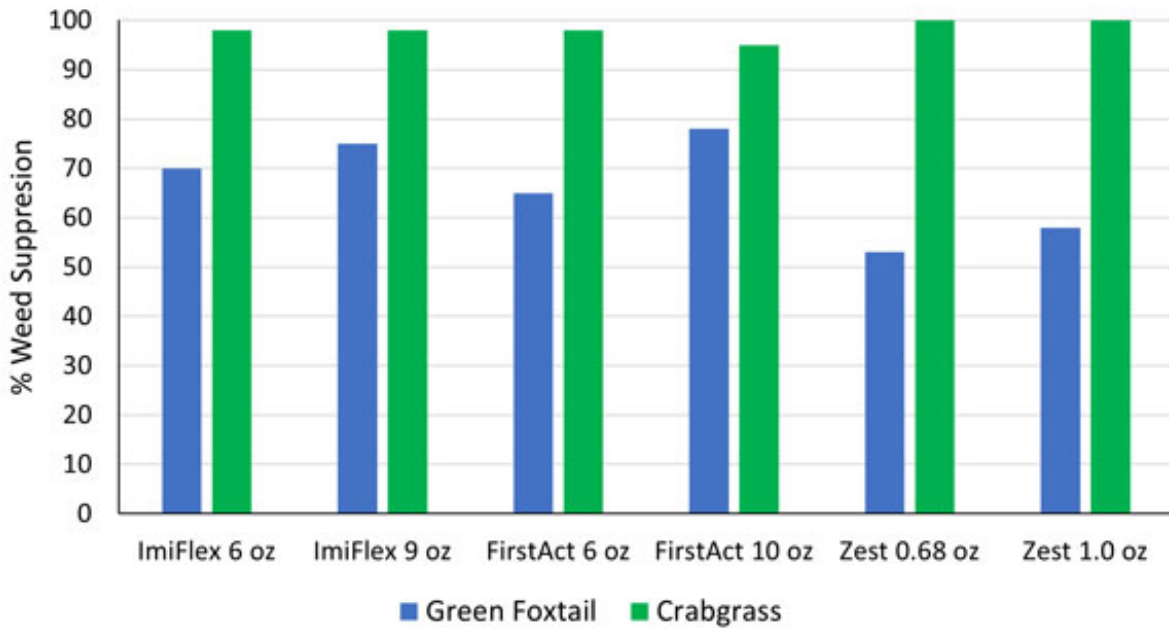
Igrowth sorghum (both grain and forage hybrids) may be sprayed with ImiFlex (imazamox) herbicide. For 2026, Alta Seed has three hybrids: ADV G1141IG (early-maturing, recommended for Western High Plains and double-cropping after wheat), ADV G1125IG (medium-early, red grain, adapted to all of the High Plains), and ADV G2168IG (medium-maturity, red grain, good for dryland fields).

Like Zest, ImiFlex is an ALS-inhibiting herbicide, though it belongs to the imidazolinone family. However, resistant weed species will not be controlled with ImiFlex. ImiFlex may be applied preemergence at 6 to 9 oz/a or postemergence at 6 oz/a up to 20-inch tall sorghum. Only one application per year is allowed. Preemergence applications to grain sorghum should include other residual herbicides, including atrazine, mesotrione (Callisto, others), and Group 15 herbicides like S-metolachlor (Dual II Magnum, others) or dimethenamid (Outlook). Sorghum seed must be used when Group 15 herbicides are applied. Currently, only atrazine and S-metolachlor/metolachlor are labeled for use on forage sorghum.

Postemergence weeds must be 3 inches or less in height for ImiFlex to be effective, except for non-imidazolinone-resistant volunteer corn, which may be controlled up to 8 inches in height. Figure 2 shows the importance of applying to small weeds. Green foxtail was 4 to 6 inches at the time of application, whereas crabgrass was 1 to 2 inches in height. Foxtail suppression was less than 80% regardless of the herbicide applied. Conversely, all herbicides provided greater than 90% crabgrass control.

- Include COC or methylated seed oil (MSO) at 1 to 2% v/v along with a nitrogen source (5% UAN or 20 lb/100 gallons AMS) when applying ImiFlex postemergence.
- When applying in a tank-mixture with 2,4-D or dicamba, substitute NIS at 0.25% v/v in place of COC or MSO to minimize the risk of crop injury.
- Do NOT mix ImiFlex with Huskie, Peak, or Ally herbicides as unacceptable crop injury can occur.

For complete stewardship information, contact your local Igrowth seed dealer.



**Figure 2. Weed control of large foxtail (4 to 6 inches) compared to small crabgrass (1 to 2 inches) at 29 days after postemergence applications. The study was conducted in 2001 at Garden City. Graph created by Patrick Geier, Kansas State University.**

### Double Team sorghum and FirstAct herbicide

Double Team sorghum (both grain and forage hybrids) allows the postemergence application of FirstAct (quizalofop) herbicide. FirstAct is a Group 1 (ACCase-inhibiting) herbicide.

Some key DoubleTeam hybrids that are available in 2026 include:

- SP 30A30 DT is an early-maturing hybrid with bronze seed suitable for double-cropping
- SP 45A45 DT is a medium-early hybrid with Bronze seed that can be placed on dryland or irrigated acres
- SP 58M85 DT is a medium-maturity hybrid with bronze seed that tolerates cool soils well
- SP 65B21 DT is a medium-maturity hybrid adapted to dryland and irrigated conditions.

Herbicides in Group 1 only control grasses and provide no residual control. FirstAct provides excellent control of many of our common grasses, including glyphosate-, glufosinate-, and imidazolinone-tolerant volunteer corn. However, volunteer corn containing the Enlist herbicide tolerance trait will not be controlled by FirstAct. It is important to note that grass activity with FirstAct can be antagonized by the addition of broadleaf tank-mix partners, especially Group 4 herbicides such as dicamba, fluroxypyr (Starane), and 2,4-D.

Broadleaf herbicide applications should be made 1 day before or 7 days after FirstAct application. Double Team hybrids are designated either as “DT” or “DT2”. For DT hybrids, sorghum must be 11 inches or taller before FirstAct is applied, but in DT2 hybrids, applications can be made once sorghum reaches 4 inches tall. This is because DT hybrids contain a single copy of the resistance gene

(only one parental line carries the trait), whereas DT2 have two copies of the resistance gene (both parents carry the trait). FirstAct should be applied before sorghum reaches 20 inches tall for both DT and DT2 hybrids. FirstAct may be applied at 5 to 12 oz/a depending on the weeds to be controlled. COC is the preferred adjuvant with FirstAct, and UAN (2 to 4 qt/a) or AMS (2 to 4 lb/a) may be included. Sequential applications are permitted as long as the total product amount does not exceed 21 oz per year.

Full stewardship requirements can be found at [sorghumpartners.com/double-team/](https://sorghumpartners.com/double-team/)

### **Important considerations with herbicide-resistant sorghum**

Properly managing herbicide-tolerant sorghum is important for preserving the technology in the future. Cultural and mechanical weed management practices are necessary for successful sorghum production. Controlling any existing weeds prior to planting and applying a strong preemergence herbicide at planting are critical for managing weeds in sorghum. No herbicide-tolerant sorghum is currently labeled for control of shattercane (*Sorghum bicolor*) or johnsongrass (*Sorghum halapense*). Both of these species readily cross-pollinate with our cultivated sorghum varieties, and the likelihood of resistance being passed to these weeds is high. Shattercane resistance to ALS-inhibiting herbicides was first identified in Kansas in 1996. Steps must be taken to ensure shattercane and johnsongrass in or near fields planted to herbicide-tolerant sorghum do not flower at the same time as the crop.

Specific stewardship guidelines are available from retailers marketing the sorghum and herbicides mentioned in this article. The United Sorghum Checkoff Program provides an excellent pamphlet of general stewardship guidelines at: [https://www.sorghumcheckoff.com/wp-content/uploads/2022/12/09\\_2022\\_HT\\_StewardshipGuide.pdf](https://www.sorghumcheckoff.com/wp-content/uploads/2022/12/09_2022_HT_StewardshipGuide.pdf)

More information on sorghum weed control can be found in the [2026 K-State Chemical Weed Control Guide SRP-1194](#).

*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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## 6. Early Weed Control is Crucial for Cotton Success in Kansas

Early-season weed control is essential in cotton because it can be slow to canopy relative to other crops grown in Kansas and is, therefore, less competitive early in the growing season (Figure 1). Weeds compete with cotton for water, nutrients, and sunlight during the growing season and contribute to trash and discoloration of the lint at harvest, resulting in reduced quality grades and lint value.



**Figure 1. Residual herbicides applied at planting are needed to prevent early-season weed competition in cotton. Photo by Logan Simon, K-State Extension.**

Tillage can be used to provide a “clean slate” for early-season weed control; however, most Kansas cotton acreage is in conservation tillage systems, so effective herbicides are needed before planting. Glyphosate is often used in burndown herbicide applications in combination with other products. Low rates of flumioxazin (Valor, others) can be applied 14 to 30 days before planting and have some residual activity. Paraquat (Gramoxone, others) and glufosinate (Liberty, others), which only control actively growing weeds, are also effective for pre-plant burndown herbicide applications. A newer herbicide labeled for burndown applications in cotton is tiafenacil (Reviton). It is a Group 14

herbicide applied 7 to 14 days before planting at 1 to 3 fluid ounces per acre and works best when applied with glyphosate for grass control.

If dicamba-resistant cotton is planted, [approved dicamba formulations](#) (Stryax, Engenia, or Tavium) can be used in a burndown program with no waiting period before planting. There is a 21- to 28-day waiting period if non-dicamba-resistant cotton is planted and/or other labeled dicamba formulations are used. Similarly, the 2,4-D formulations Enlist One and Enlist Duo may be applied pre-plant with no waiting period in 2,4-D-resistant cotton, but there is a 30-day waiting period if non-2,4-D-resistant cotton and/or other labeled 2,4-D formulations are used.

Residual herbicides applied at planting are the foundation of any good weed management program. Not only are they necessary to prevent yield loss, but they are also recommended to manage or delay the development of herbicide-resistant weed populations. Some effective residual herbicides for early-season use in cotton include Group 15 herbicides like acetochlor (Warrant, others), S-metolachlor (Dual, others), dimethenamid-P (Outlook), and pyroxasulfone (Zidua). These herbicides only control weeds that have not yet germinated, and they require about ½ inch or more of rainfall for maximum activity. Group 5 herbicides like fluometuron (Cotoran), and prometryn (Caparol) generally require less rainfall for activation; however, these herbicides have some limitations regarding rotation restrictions to crops like corn, grain sorghum, and wheat. Similarly, pyriithiobac-sodium (Staple) will prevent rotation to grain sorghum in the following year. This restriction and the prevalence of ALS-resistant weeds have resulted in little Staple use in Kansas.

Layered residual herbicides can be especially important in cotton because it is slow to canopy (Figure 2). Group 15 herbicides can also be applied over the top of cotton if the maximum application rate for the season is not exceeded at planting. Pyroxasulfone (Zidua) can be applied postemergence to cotton in conjunction with a split nitrogen application if impregnated on dry fertilizer. This approach can help manage plant growth in irrigated production systems and extend residual herbicide activity. It is important for these, and all herbicide applications, to be made when cotton is at a growth stage allowed on the herbicide label.



**Figure 2. Residual herbicides applied post-emergence prevent late-season weed competition in cotton. Photo by Logan Simon, K-State Extension.**

For more detailed information, see the “2026 Chemical Weed Control for Field Crops, Pastures, and Noncropland” guide at <https://www.bookstore.ksre.ksu.edu/pubs/CHEMWEEEDGUIDE.pdf> or check with your local K-State Research and Extension office for a paper copy.

*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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## 7. Dicamba Training for Over-The-Top Formulations

As you finalize the details of your weed management plan for 2026, remember that applications of Stryax, Engenia, and Tavium will require additional training and recordkeeping.

Online modules are available from [Bayer](#), [BASF](#), and [Syngenta](#). Currently, all three companies have self-paced, online modules. BASF is offering the option of live webinars on April 21 and April 30. At this time, we are not aware of any in-person training being offered in Kansas.

For more information, visit the product websites at:

<https://www.stryaxapplicationrequirements.com/>

<https://www.engeniaherbicide.com/>

<https://www.syngenta-us.com/herbicides/tavium-application-stewardship>

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## 8. Pale Western Cutworm Benefits from Dry Weather

Pale western cutworm (*Agrotis orthogonia*), an infrequent pest of wheat in western Kansas, has been active this spring. This pest benefits from drought conditions, and it appears that the drier weather pattern of the last few seasons has allowed populations to build up in some areas. Outbreaks of this caterpillar are usually sporadic and can occasionally cause highly localized, extreme damage. Suspected pale western cutworm damage was reported from fields in northwest Kansas in 2025, and this month, a wheat field in Wichita County suffered noticeable damage, and active pale western cutworm caterpillars were found (Figure 1).



**Figure 1. Pale western cutworm caterpillars found in a damaged wheat field. Photo courtesy Alan Baker, Wichita Co. Extension.**

Larvae have smooth pale gray-white, sometimes gray-green, bodies without the conspicuous side stripes of other cutworm species. Most notably, these caterpillars' heads are a light brown with two vertical black dashes on the face that resemble an inverted "v" (Figure 2). Mature caterpillars can reach up to 1.5 inches in length before pupating in the soil. Adult moths begin to emerge from the pupal chambers in late July and lay eggs late summer through fall that will overwinter in the soil until next spring when they hatch to start the new year's generation of caterpillars. Adults lay eggs in the drier, loose soil, so caterpillar activity is usually first noticed in the driest areas of a field.



**Figure 2. Note the brown head capsule and distinct vertical dark stripes on the face. Photo courtesy Alan Baker, Wichita Co. Extension.**

Pale western cutworms are a belowground pest and feed on stems, severing them just below soil level. Caterpillars can also bore into or out of the plants at their base near the soil level (Figure 3). Large areas of a field can be lost in just a few days under outbreak conditions (Figure 4).



**Figure 3. Note the damage to the base of the plant. Photo courtesy Alan Baker, Wichita Co. Extension.**



**Figure 4. Wheat field impacted by pale western cutworm caterpillars. Photo courtesy Alan Baker, Wichita Co. Extension.**

Management of this pest is warranted when larvae average 2 or more per foot of row. Scouting will require digging up several inches of soil immediately along the rows. Chemical control of pale western cutworm is possible, but difficult. Larvae feeding below the surface may not be fully impacted by an application lacking in carrier volume. The typically drier conditions of the soil associated with these outbreaks can also make it difficult for the application to penetrate the soil profile.

Areas of western Kansas that maintain drought conditions and have a drier winter should be vigilant for this pest next spring. For more information on pale western cutworm and management options, visit the following wheat insect pest management guide:

[https://bookstore.ksre.ksu.edu/pubs/wheat-insect-pest-management-2026\\_MF745.pdf](https://bookstore.ksre.ksu.edu/pubs/wheat-insect-pest-management-2026_MF745.pdf)

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## 9. Spring Crops Field Day Set for May 19 in Parsons

The 2026 Spring Crops Field Day will be held Tuesday, May 19, from 8:30 a.m. to 1:00 p.m. at the Southeast Research and Extension Center near Parsons. This annual event provides an opportunity to hear the latest research updates and see field demonstrations.

The program will feature presentations on relay intercropping, alfalfa fertility, and grain conditioning for quality, along with wheat variety plot tours led by K-State specialists in agronomy and plant pathology.

Attendees will gain practical, research-based insights applicable to crop production across the region.

Lunch will be provided, and participants are encouraged to register in advance by contacting the Southeast Research and Extension Center at 620-784-5337 or via email at [jcoover@ksu.edu](mailto:jcoover@ksu.edu)



# Spring Crops Field Day 2026

Lunch Sponsored By:



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## Tuesday, May 19

8:30 a.m. - 1:00 p.m.

**Southeast Research - Extension Center**

25092 Ness Road, Parsons

### Program Speakers

#### **Relay Intercropping**

Dr. Cott, K-State Agronomy

#### **Alfalfa Fertility**

James Coover, K-State Extension

#### **Grain Conditioning for Quality**

Dr. Campabadal, K- State Grain Science, IGP

#### **Wheat Variety Plot Tours**

Dr. Sullivan, K-State EKREC, Agronomy

Dr. Anderson Onofre, K-State Plant Pathology

**REGISTER NOW**



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## 10. Southwest Spring Field Day Set for May 21 in Garden City

The K-State Southwest Research-Extension Center will host its Spring Field Day on Wednesday, May 21, beginning at 4:00 p.m. (CT) at 4500 E. Mary St. in Garden City. The event will highlight current research and production updates relevant to cropping systems in southwest Kansas.

Program topics will include wheat and canola variety performance and year-in-review updates, bio-stimulant use in wheat, and annual forage variety performance and management. Presentations will be led by K-State specialists and researchers, including Logan Simon, Augustine Obour, Benjamin Garcia, Mike Stamm, and John Holman.

Dinner will be provided following the program. Those planning to attend are encouraged to register in advance at: [https://kstate.qualtrics.com/jfe/form/SV\\_eL2DHAHqygNwBuK](https://kstate.qualtrics.com/jfe/form/SV_eL2DHAHqygNwBuK)



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