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Extension Agronomy

eUpdate

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These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy eUpdate Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Kathy Gehl, 785-532-3354 kgehl@ksu.edu, or Dalas Peterson, Extension Agronomy State Leader and Weed Management Specialist 785-532-0405 dpeterso@ksu.edu.

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1. Planting Cotton in Kansas: Soil Temperature and Seed Quality are Key

Cotton can overcome many environmental stresses and produce profitable lint yields when the crop gets off to a good, uniform start. The question becomes, when is the “best” time to plant cotton to ensure good establishment? Cotton production in Kansas is typically thermally limited, with slower soil warming and higher surface residue levels than in other cotton-growing areas. Because of our relatively limited thermal range, cotton in Kansas must be planted as early as possible to maximize yield potential. However, those extra heat units from early planting are only beneficial if an adequate stand is made. For many reasons, including seedling chilling, potential herbicide injury, thrips damage, and seedling diseases, it pays to plant when growers can get an adequate stand and when the crop will grow vigorously.

Like corn, the goal is to achieve an adequate, uniform stand, both in plant spacing and in plant age. The recommended planting window for cotton in Kansas is relatively narrow compared to other summer crops, running roughly from May 1 to June 5. However, it is best to make planting decisions based on soil conditions rather than calendar dates. Soil temperature trends can be monitored using the Kansas Mesonet (<http://mesonet.k-state.edu/agriculture/soiltemp/>). The Mesonet can provide a general idea of soil temperatures and trends across the state. However, producers must monitor conditions at the field level, accounting for differences in residue, soil moisture, and other factors that can lead to warmer or cooler temperatures than those observed at the local Mesonet station. Cotton seed germination and early growth/emergence are favored by soil temperatures above 64°F and adequate, but not excessive, soil moisture. Based on USDA-ARS research work at Lubbock, TX, seedling cotton requires more than 100 hours above 64°F at the seed level to emerge.

Soil Temperatures – Current, Departure from Normal, and Forecast

We often use 60°F at planting depth in Kansas as our baseline temperature. As of April 4, the statewide average 7-day 4-inch soil temperature was 56.9°F or 4.8°F above normal. Soil temperatures have averaged above normal since early February, and while they reach 60°F during the heat of the afternoon, they do not stay above that mark overnight. The 8 to 14-day outlook, issued on April 7 and valid through April 21, favors above-normal temperatures statewide. The average date on which the statewide 7-day average soil temperature first reaches and remains over 60°F is April 29, but this threshold is likely to be reached a few days earlier than normal this year, given the warmer-than-normal forecast.

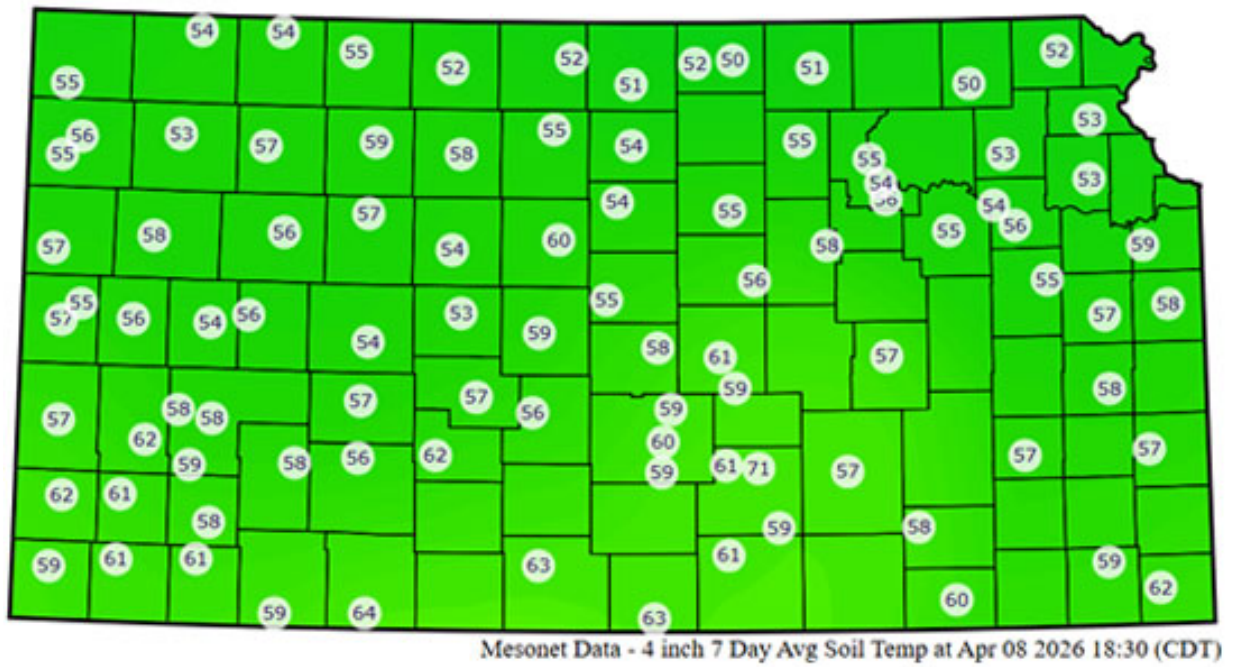


Figure 1. Average 7-day 4-inch soil temperatures (°F) as of April 8, 2026. Data and image courtesy of Kansas Mesonet (mesonet.k-state.edu).

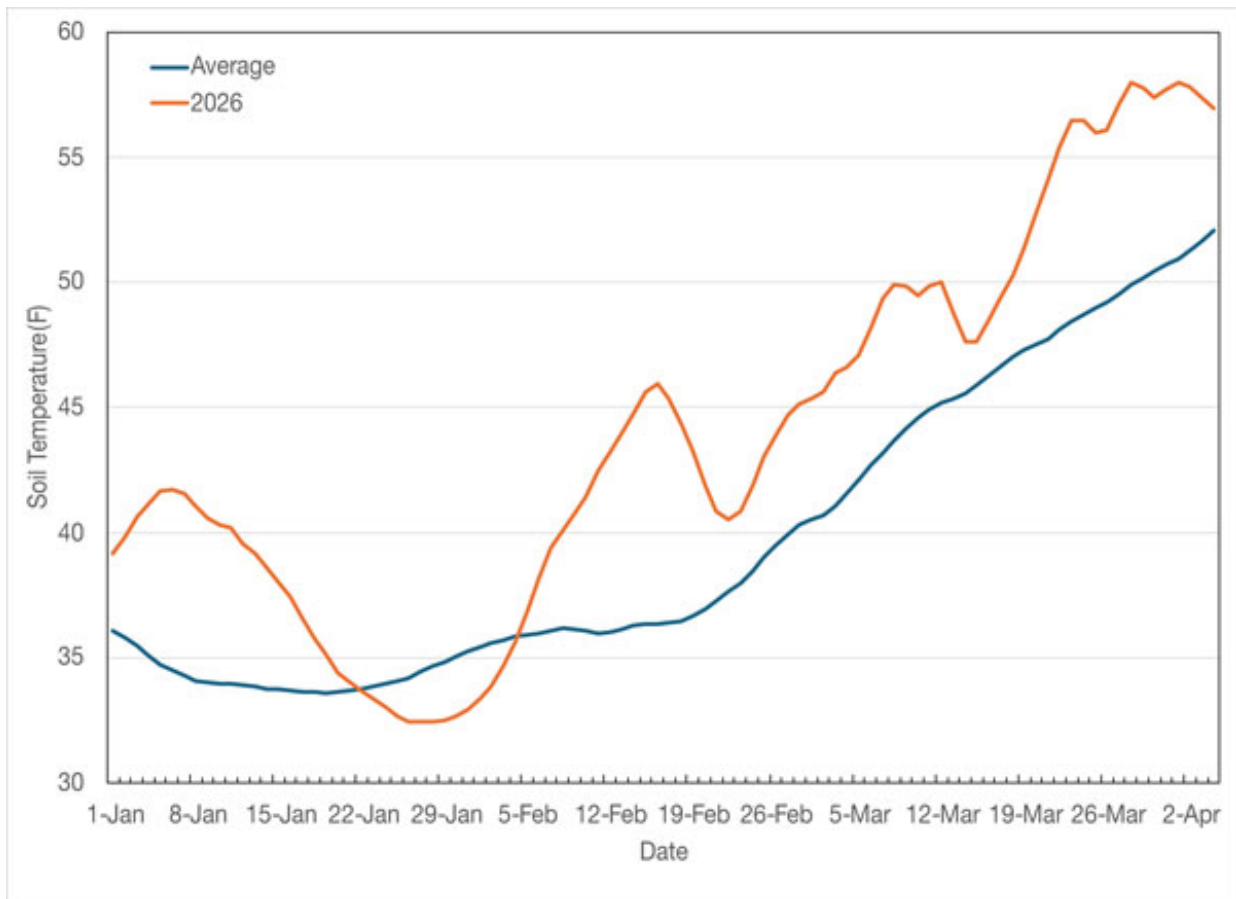


Figure 2. Seven-day average and 2026 daily 2-inch soil temperatures. Dates plotted represent

the midpoint of the 7-day average period. Graph created by Matthew Sittel, K-State Extension.

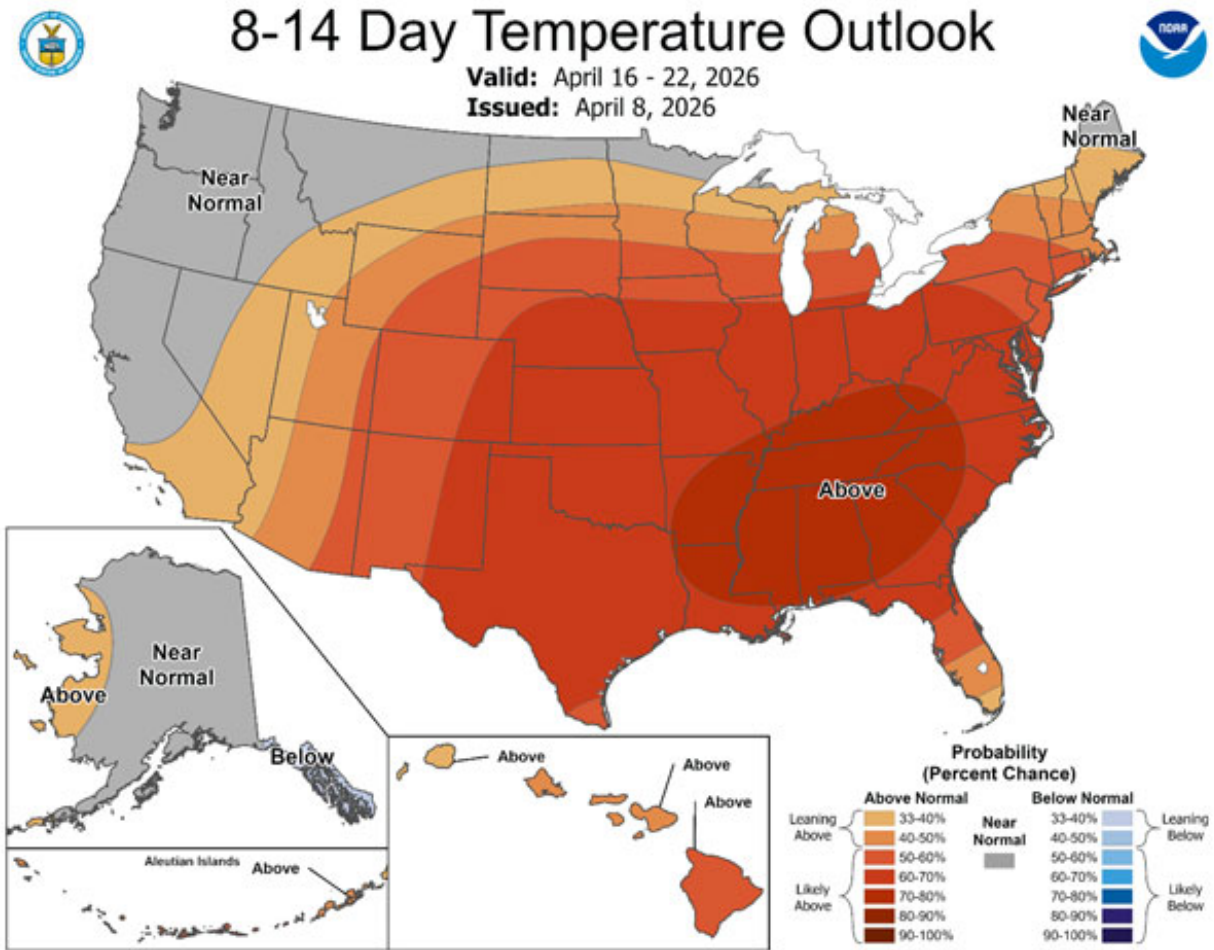


Figure 3. The Climate Prediction Center’s 8 to 14-day temperature outlook for the period April 16-22, 2026. Source: NOAA Climate Prediction Center.

Information from North Carolina State University’s cotton web page illustrating the importance of heat unit accumulation immediately following planting is shown in Table 1.

Table 1. Relationship between predicted DD-60s and Planting Conditions. Source: North Carolina State University, <https://cotton.ces.ncsu.edu/>.

Predicted DD-60 accumulation for five days following planting	Planting conditions
10 or less	Very Poor
11 – 15	Marginal
16 – 25	Adequate
26 – 35	Good
36 – 49	Very Good
50	Excellent
Avoid planting cotton if the low temperature is predicted to be below 50°F on either of the	

two nights following planting, or if the daily DD-60s are near zero on the day of planting.

Effects of cold soil on cotton seeds

Cotton seed exposed to cold for the first 2-3 days after planting, OR when the seed is absorbing moisture from the soil, is susceptible to chilling injury. The greatest sensitivity occurs on the first day after planting, when the seed is taking up water, as shown in Figure 4. Within the first 30 minutes after planting, the seed can absorb up to 60% of the water needed for germination.

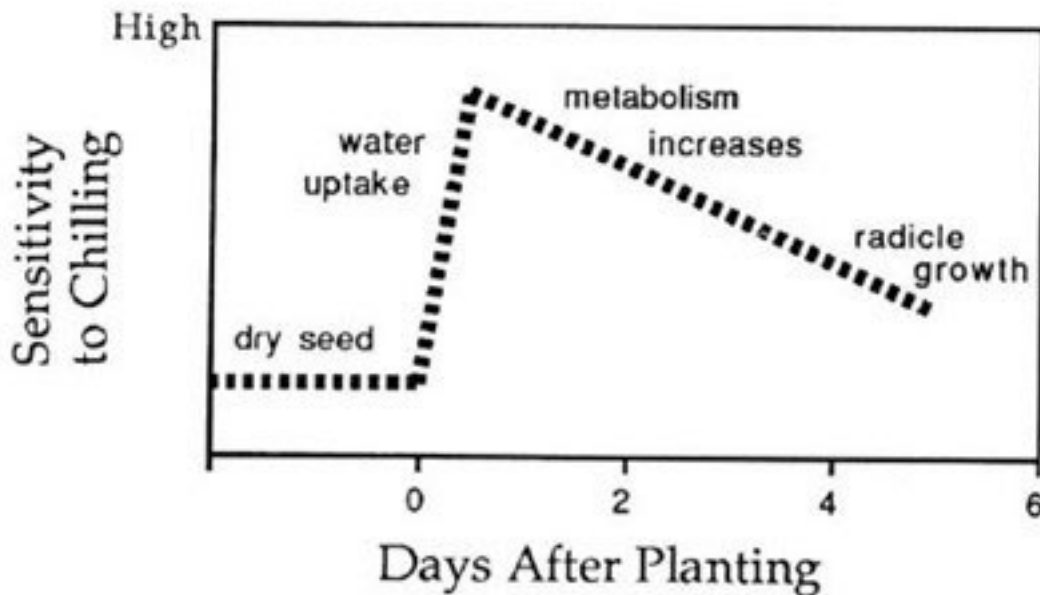


Figure 4. Relative sensitivity of cotton to chilling in the first several days after planting. K. Hake, W. McCarty, N. Hopper, and G. Jividen.

Seedlings may suffer damage if soil temperatures drop below 50°F during this critical germination period. Damage may result in malformed seedlings, loss of or damage to the taproot, and a greater likelihood of seedling disease problems. Injury usually kills the root tip, stopping normal taproot growth and leading to lateral root development (Figure 5). If the plants survive, the root system will not develop normally. Very cold soil temperatures (<45°F) will likely lead to seedling death.

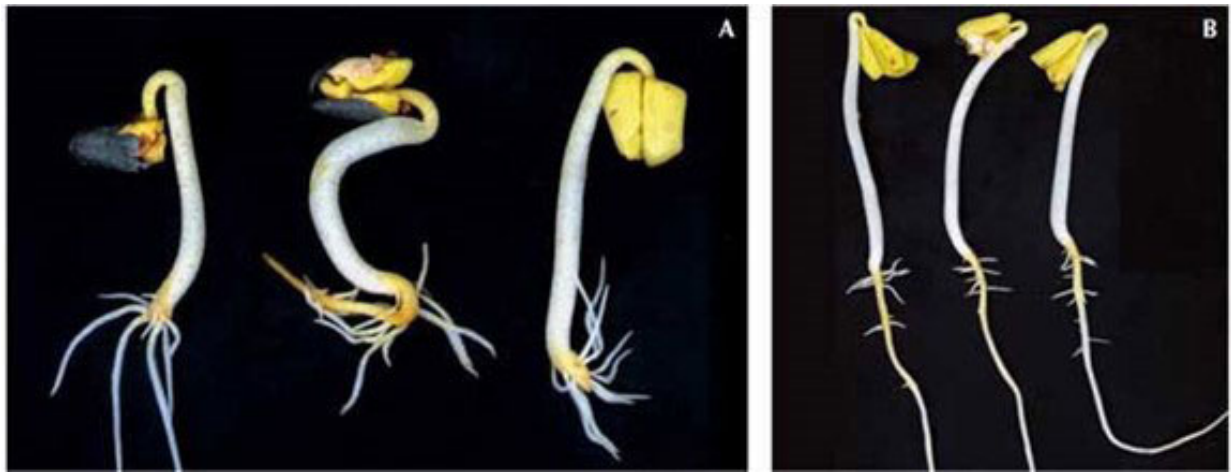


Figure 5. Seedlings in A and B were exposed to the same temperature (86°F), with the exception of the first six hours of imbibition, in which seedlings in A were exposed to chilling temperatures of 40°F. Photos by N. Hopper, Texas Tech University and J. Burke, USDA-ARS, Lubbock, TX.

Seed Quality – Warm and Cold Germination Scores

In addition to adequate soil temperature, it is imperative that producers in Kansas plant cotton seed with exceptional seed quality and understand both their warm and cold germination scores on their seed lots. Warm germination scores are standardized across the industry and are legally required on seed tags. Cold germination tests are not required by law but are available from reputable seed companies. Be cautioned that cold germination test procedures are not necessarily uniform across companies. Be sure to ask and understand what methodology was used before comparing cold germination scores across companies.

Generally, the cold germination test for cotton should be conducted at 64.4 degrees, with that temperature held constant for seven days. To be counted as germinated, the seed must sprout, and the radicles of the sprouted seed must reach at least 4 cm in length. However, the results for the cold germination test are not nearly as repeatable as those of the warm test, which is the primary reason why there is no legal standard such as for warm germination. Producers should plan to plant cotton seeds with the highest cold germination scores first. Cold scores greater than 85% are generally preferred for early planting. Some companies may be able to provide the Cool-Warm Vigor Index score for their seed. This test, developed in Texas, gives a score that is the combined percentage of the 4-day warm germination test and the cool germination test. Scores <120 = Poor, 120 to 139 = Fair, 140 to 159 = Good, >160 = Excellent. Producers should first plant seeds with the highest scores and move to lower-scoring seed lots as soil temperatures increase.

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2. Controlling Cool-Season Grasses in Warm-Season Native Grass Stands

Cool-season perennial grasses (CSG), particularly Smooth brome (*Bromus inermis*) and Tall fescue (*Festuca arundinacea*), are commonly cultivated as forage species in Kansas. While desirable in pastures managed for cool-season forage, they can also become established and problematic in areas managed as native warm-season grass (WSG) stands. Herbicides are a common tool used to knock back weedy species in pasture and rangeland, but there are only a few herbicides that are effective on grasses, and they come with a high risk of off-target effects to native WSG that are sensitive to the same herbicides.

Luckily, the peak growth periods for WSG and CSG occur at different times of year (Figure 1). We can leverage this difference to apply herbicide and prescribed burning to target weak points in CSG development while reducing or even avoiding off-target impacts to WSG.



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Figure 1. Depiction of the general growth pattern difference between cool-season grasses (CSG, top) and warm-season grasses (WSG, bottom) over the course of the growing season. Figure courtesy of Melanie Joseph/LawnStarter.

Prescribed Burning

Historically, fires occurred in Kansas at an average of every 2 to 10 years. Responses of specific species will vary, but native WSG have evolved with fire and are tolerant of prescribed fire management. While CSG are tolerant of prescribed burning in late winter and early spring (up to ~1/2" growth), burning in the late spring, when they are at peak growth (4-6" growth, typically April and May), has been shown to reduce CSG productivity. Consider repeat burns at this time of the year to reduce CSG in your WSG over time. This approach will also clear off any thatch in your stand that could reduce herbicide uptake by target plants during an application later in the year.

Herbicide Application Timing

When CSG first emerges in the spring, it's tempting to hit them with herbicide before WSG is active. This approach is not necessarily problematic, but an important window for more effective control emerges as CSG and WSG are going dormant at the end of the season.

Effective control of perennial plant species is highest when we can apply herbicide at a time when target plants will effectively absorb and transport the herbicide down to their root systems. In the spring, plants draw on stored carbohydrate reserves to support aboveground growth. Because plants are "pulling up" during this time, they're not moving reserves down to their root system and are unlikely to transport any herbicide applied to their foliage down to their roots either. Plants will take damage to their aboveground foliage, but as long as they have more reserves, perennial CSG like smooth brome and fescue will resprout again, even though they get knocked back a bit.

In the fall, both WSG and CSG will move reserves down to their roots as they enter dormancy, but their timing is slightly different, which is key for effective herbicide application at this time. In the week after the first hard frost, WSG has finished this process and is safely dormant for the season. CSG are still actively moving reserves down into their roots for the season, though, which is why this makes for a great window to apply herbicide, and when CSG are likely to transport it to their root systems while avoiding damaging nearby native WSG.

For fall herbicide application, choose a sunny day when daytime temperatures are at or above 50° F. 1-3 qt/acre of 3lb ae/gal glyphosate can be used for both tall fescue and smooth brome control. Refer to the label for the specific glyphosate product you use for any adjuvant requirements to increase efficacy. Plateau for tall fescue (imazapic, 12oz/acre) or Arsenal for smooth brome (imazapyr, 1-2pt/acre) can also be applied at this time, providing residual control into the following year. Plateau persists in the soil for 3-6 months, but keep in mind that Arsenal can persist for approximately a year after treatment and restricts germination of new CSG and WSG from the soil during this time (see 2026 Chemical Weed Control Guide for persistence times).

If you are applying herbicides in the spring, use glyphosate at the above rate to knock back CSG before WSG emerges.

Take Home Message

Regardless of when you apply herbicide, removing thatch from the soil surface through burning, mowing, grazing, etc., can help increase contact before foliar-applied herbicides and with your target species (be sure to allow time for regrowth). If you can combine late spring prescribed fire with fall herbicide application, you can increase the impact of CSG management more than either method alone while minimizing impact to your native WSG.

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3. Tips for Safe and Successful Prescribed Burning

The prescribed burning season in Kansas is in full swing, with high fire activity over the past few weeks. Much-needed precipitation is possible for parts of the state through the weekend and early next week, but prescribed fire activity will likely pick up again in the following weeks.

While prescribed burning is a key management tool for maintaining grasslands, Kansas has seen several incidents of escaped prescribed fires this season. There is always risk in conducting prescribed burns, but adequate planning before, during, and after a prescribed burn is critical to their safe and effective use.

This article discusses the reasons for conducting a prescribed burn, how to conduct a successful burn, and online tools and resources useful for planning a prescribed burn.

Reasons for conducting a prescribed burn

There are many reasons to conduct a prescribed burn, including increased cattle gains and brush control, which are common management goals. Mid-to-late spring burns have been effective in increasing stocker cattle gains compared to unburned pastures. Prescribed burning for brush control is more effective once the woody plants are leafed out, which can be in the late spring or summer, depending on the species. The exception to this is eastern red cedar, which is vulnerable to prescribed burning across seasons when the fuel load is adequate.

Other reasons for burning include conserving the native plant community, improving grazing distribution, enhancing wildlife habitat, and reducing wildfire severity. 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 between 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 the 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°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](http://KansasMesonet). You

can see current humidity and wind direction at mesonet.ksu.edu/fire/rh at 90+ locations across the state.

If you plan on prescribed burning under dry conditions, 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 plan to burn this year, be sure to check 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. Ensure 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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4. Cotton Jassid: Emerging Pest Considerations for U.S. Cotton Production

The cotton jassid (*Amrasca biguttula*), also known as the two-spot cotton leafhopper, is an invasive insect pest native to Asia and a serious economic pest of cotton in India that has recently expanded across the southern United States. While not yet confirmed in Kansas or Oklahoma, its rapid spread in 2025 across the Southeast and its detection in nearby regions (Mid-South) raise concern about potential movement into the Southern Plains. Kansas and Oklahoma cotton acres could be vulnerable to this pest in 2026. The cotton jassid may spread through weather events, movement of plant materials, or natural migration. Early awareness and proactive scouting will be critical to minimizing potential impacts.

Identification

Accurate identification is critical, as cotton jassid can be confused with other leafhopper species, such as the corn leafhopper. Adult jassids are small, measuring approximately 1/8 inch in length, with a wedge-shaped, pale green body (Figure 1). A distinguishing feature is the presence of a black spot on each forewing, often accompanied by two spots on the head. Nymphs are even smaller, wingless, and pale green in color. Both life stages exhibit a characteristic sideways movement when disturbed, which can help differentiate them from other insects.

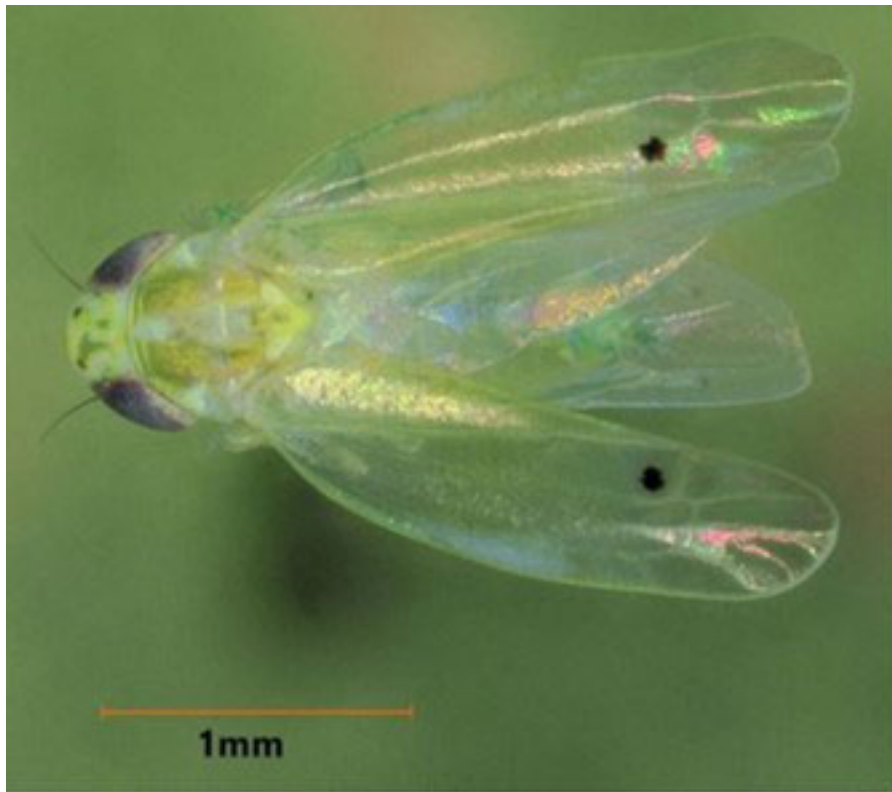


Figure 1. Adult cotton jassid (also called two-spotted cotton leafhopper). A black spot on each forewing, often accompanied by two spots on the head, is a distinguishing mark. Photo Courtesy of Dr. Isaac Esquivel, University of Florida.

Biology and Life Cycle

Cotton jassid females lay eggs within leaf veins and midribs, where they hatch in about one week. The nymphal stage typically lasts 5-16 days (Figure 2), depending on environmental conditions. Adults may live for up to five weeks, allowing for multiple overlapping generations. In warmer climates, the pest can complete numerous generations per year. For example, in India, generation time ranges from 15 to 46 days, allowing up to 11 generations per year. In Kansas, conditions may limit population growth compared to tropical regions, though reproduction during the summer months could still lead to economically significant infestations.

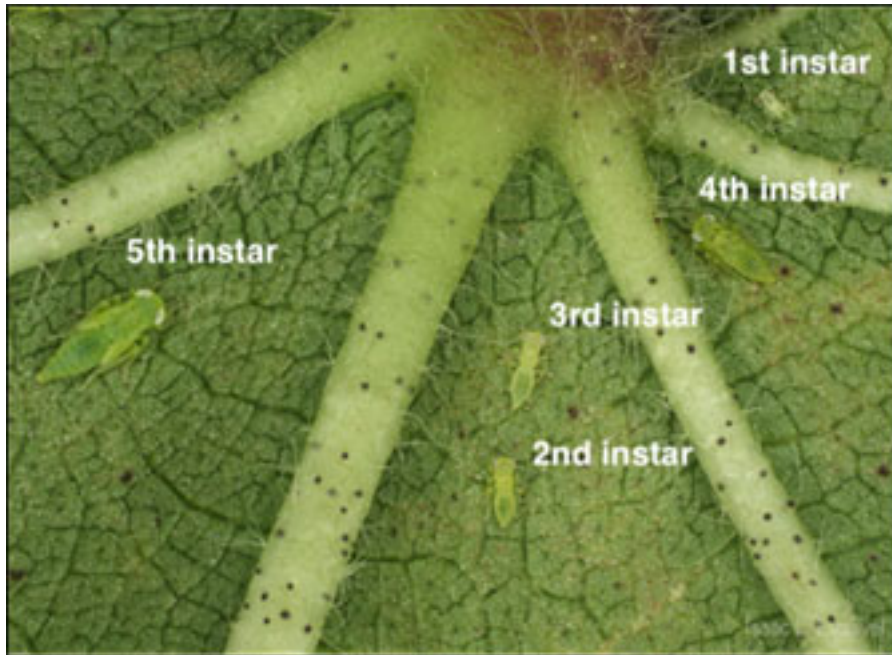


Figure 2. Cotton jassid nymphs on the underside of a leaf. Cotton jassids will progress through several instars before becoming adults. Photo courtesy of Dr. Isaac Esquivel, University of Florida.

Host Range

One factor contributing to the potential establishment of cotton jassid in Kansas is its broad host range. In addition to cotton, it can feed on crops such as soybean, peanut, sunflower, and potato, as well as okra and various ornamental plants, namely hibiscus. The presence of several of these crops in Kansas production systems, especially soybean and sunflower, may provide suitable hosts that allow populations to persist and spread.

Crop Injury and Symptoms

Both nymphs and adults feed on the undersides of leaves by extracting plant sap and injecting toxic saliva. This feeding results in a condition commonly referred to as “hopperburn” (Figure 3). It is essential to understand that this damage is not related to a virus or other pathogen (e.g., corn stunt). Early hopperburn symptoms include leaf curling, particularly downward cupping, followed by yellowing that progresses to bronzing or reddening. As damage intensifies, leaf margins may become necrotic, leading to premature defoliation. Severe infestations may lead to stunted plant growth, shedding of squares and bolls, and significant yield reductions. In heavily affected regions,

yield losses have been reported to reach 50%.



Figure 3. Hopperburn symptoms, including advanced leaf reddening. Photo courtesy of Dr. Scott Graham, Auburn University.

Look-Alike Issues

The symptoms of cotton jassid injury can resemble those caused by other factors, such as potassium deficiency or diseases like *Verticillium* wilt. For this reason, proper diagnosis requires confirmation of the insect's presence on the undersides of leaves. Without evidence of the pest, other causes of plant stress should be considered. As a reminder, cotton jassid injury is not associated with any vectored pathogen, so testing plant material cannot be used to confirm cotton jassid in the absence of the actual insect.

Scouting Recommendations

Effective management of cotton jassid begins with regular and thorough scouting. Producers should focus on examining the undersides of leaves, particularly those located at the third to fifth node from the top of the plant. Scouting should begin early in the growing season and become more frequent during periods of hot, dry weather, which can favor population development. Infestations often begin along field margins before spreading inward, so these areas should receive particular attention.

Economic Threshold

Preliminary economic thresholds developed in the southeastern United States suggest that treatment may be justified when 1 to 2 nymphs are present per leaf, and hopperburn symptoms are evident. The combination of insect presence and visible plant injury is important, as it helps distinguish cotton jassid from other leafhopper species that may not cause economic damage.

Management Considerations

Although research is still ongoing, several insecticides have shown effectiveness against cotton jassid in Georgia and Alabama. These include products such as Bidrin, Sivanto Prime, Sefina, and Carbine. Observations in the Southeast have suggested that treating field margins was ineffective for managing cotton jassid. Whole-field applications are warranted when threshold populations are identified. However, Kansas producers are encouraged to avoid unnecessary applications until local thresholds and recommendations are better established. Integrating control measures within an overall integrated pest management program and preserving beneficial insect populations should remain priorities.

To receive timely updates on cotton jassid activities in the Southern Plains, sign up for special alerts from Texas A&M AgriLife Extension by texting Cotton to (833)717-0325 or following this link: <https://www.texasinsects.org/agriculture-audio-updates-home.html>.

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5. World of Weeds: Wild Garlic and Wild Onion

This World of Weeds features wild garlic (*Allium vineale*) and wild onion (*Allium canadense*). These weeds are popping up in yards and fields in Kansas. From a distance, they may look like a clump of grass, but they definitely smell worse.

Ecology

Wild garlic and wild onion are both perennial plants in the Lily family that primarily reproduce from underground bulbs. They grow actively in late winter and early spring, making them problematic in small grains and pastures, but not summer crops (Figure 1). Wild garlic and wild onion are not very competitive; however, they can cause off flavors in dairy and grain products, reducing their value. If consumed in large quantities, they can be toxic to cats, dogs, and horses. Wild garlic was introduced from Europe and is found primarily in eastern Kansas, while wild onion is native to the US and found throughout most of the state.



Figure 1. Wild garlic growing in a wheat field. Photo: Joseph M. DiTomaso, University of California - Davis, Bugwood.org

Identification

Wild garlic and wild onion can be challenging to tell apart. A summary of some key characteristics is listed in Table 1.

Table 1. Key identifying features of wild garlic and wild onion.

	Wild garlic	Wild onion
Distribution	Eastern 1/3 of KS	Statewide
Leaves	Hollow, round, 8 to 24 inches long	Solid, flat, 4 to 12 inches long
Scape	Up to 35 inches	Up to 24 inches
Flowers	Small, greenish white to pink	White or pink

Both wild garlic and onion grow from bulbs that produce fibrous roots. The bulb of wild onion has a fibrous outer coating, which wild garlic does not have.

Leaves of both plants are thin and waxy. Wild garlic leaves are 8 to 24 inches long, nearly round, and hollow. Wild onion leaves are 4 to 12 inches long, flat, and keeled (they have a 'canoe' at the tip). Leaves are not hollow.

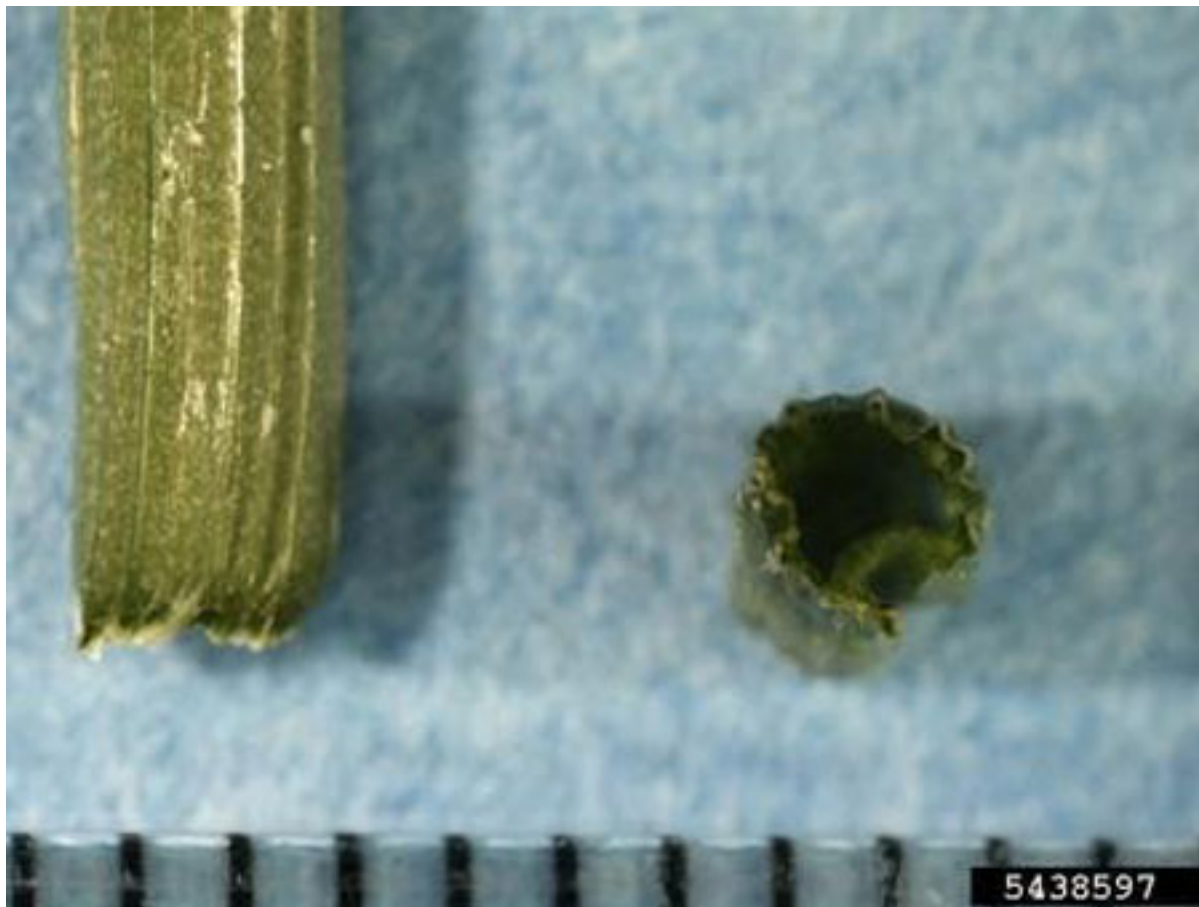


Figure 2. Wild garlic leaves are round and hollow. Photo credit: Ohio State Weed Lab, The Ohio State University, Bugwood.org

Flowers, when produced are formed in round clusters at the top of a scape (leafless flower stalk) that is up to 35 inches tall in wild garlic, about 20 inches tall in wild onion (Figure 3). Flowers have 6 petals and are usually replaced by bulblets. Wild garlic flowers are small and greenish white to pink on short stems (Figure 4). Wild onion flowers are white to pink in color. Seeds are seldom produced by either species. Wild garlic seeds are flat, black, and wrinkled; wild onion seeds are round with a ridge and shiny black in color.



Figure 3. Wild onion with flowering stem. Photo credit: Ohio State Weed Lab, The Ohio State University, Bugwood.org



Figure 4. Wild garlic flowers Photo credit: Ohio State Weed Lab , The Ohio State University, Bugwood.org

Management

Postemergence applications of herbicides containing 2,4-D and dicamba are economical options for controlling or suppressing wild garlic and wild onion. However, they can injure wheat crops, especially if [2,4-D is applied too early](#) or [dicamba is applied too late](#). Harmony Extra has a wider application window in wheat but generally provides better control of wild garlic than wild onion. Combining 2,4-D and Harmony Extra can provide better control.

Chemical control of wild garlic and wild onion can be difficult because their waxy leaf surface and upright growth habit limit herbicide absorption. Integrated weed management practices can suppress wild garlic and wild onion. Crop rotation and maintaining competitive crops can disrupt the life cycle. Frequent tillage from fall through late spring can deplete underground reserves,

particularly under warm, dry soil conditions. However, tillage may also spread bulbs to new areas.

For more information, see the “2026 Chemical Weed Control for Field Crops, Pastures, and Noncropland” guide available online at <https://bookstore.ksre.ksu.edu/pubs/SRP1194.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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