Issue 1061

K-STATE Research and Extension

Extension Agronomy

eUpdate

07/10/2025

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

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1. Wheat streat mosaic management: Pay attention to wheat-free windows

This article is the first in a multi-week Agronomy eUpdate series on wheat streak mosaic complex management to address the 2025 outbreak.

Wheat streak mosaic complex (Figure 1) devastated many wheat fields across central and western Kansas in 2025. The conditions that favored this outbreak were covered in this previous eUpdate article:
eupdate.agronomy.ksu.edu/article/high-levels-of-wheat-streak-mosaic-virus-in-parts-of-kansas-in-2025-640-8.

Wheat streak mosaic complex consists of a complex of three viruses: *wheat streak mosaic virus*, *Triticum mosaic virus*, and *High Plains wheat mosaic virus*. When two or more of these viruses are present in the same field, yield losses can be synergistic. As a reminder, the wheat streak mosaic complex of viruses is vectored by the tiny wheat curl mite (*Aceira tosichella*). We know that mite populations were very high in the state at the end of the 2025 season. Research has reported that up to 500 curl mites can be found on a single healthy wheat head, which can conservatively translate to more than 1 billion mites per acre.

Curl mites can only survive ~4 days without a living host, so when the wheat crop dries down, mites will work their way to the top of plants and assume an "upright posture" to help them disperse by wind. Curl mites don't fly, and they walk very slowly, so dispersal by wind is their only way to move in the landscape. The period when mites are migrating off the mature wheat crop has been referred to as the "mite rain" period, as billions of mites are showering down in the landscape. When conditions are very windy, mites can be passively dispersed more than 10 miles. The highest risk place for curl mites to survive the summer is volunteer wheat that is present at or around harvest.

Conditions that favor grain shattering, such as preharvest hail or harvest delays due to windy storms (such as much of the 2025 Kansas wheat harvest), can increase the presence of pre-harvest volunteers. If mites are allowed to survive on this volunteer wheat or alternative hosts until the fall-established wheat crop is planted, there is a high likelihood of another outbreak in 2026. As a reminder, there are no recommended insecticides for wheat curl mite management.

Figure 1. A leaf with characteristic symptoms of wheat streak mosaic complex. Photo taken in Russell, KS in 2025. Photo by Kelsey Andersen Onofre, K-State Research and Extension.

Volunteer wheat control will be essential in 2025

There are two critical periods for volunteer control: **immediately after harvest** and **prior to fall planting**. Volunteer wheat **present at harvest** is the perfect place for populations of curl mites to migrate as the crop dries down. Controlling this volunteer wheat as soon as possible will help dilute the mite populations heading into the remaining summer months. The second most critical window is pre-planting, as mites present at this time will migrate directly to the 2026 crop.

We are expanding the recommendation for volunteer wheat control to include regional recommendations for wheat-free windows (Figure 2). These windows include periods 30 days prior to the start of the optimal winter wheat planting window by zone in Kansas. As the wheat curl mite is a community pest, coordinated breaks in volunteer wheat will have the highest likelihood of lowering local and statewide mite levels moving into our 2025 optimal planting date periods. Volunteer wheat that emerges after the fall crop is already established poses a lower risk as a green bridge and can be thought of in a similar way as the fall crop. Fall wheat planted early during wheat-free windows risks bridging wheat curl mite to the fall-established crop.

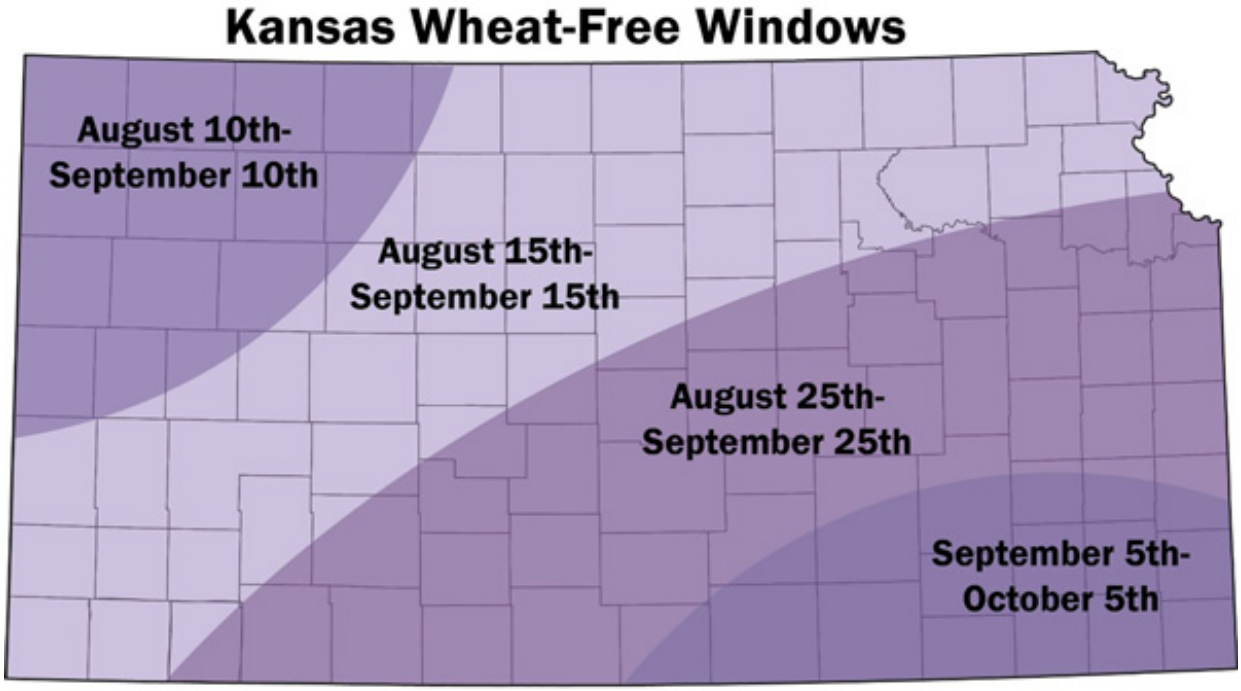

Figure 2. Proposed wheat-free windows **in different regions of Kansas to reduce the likelihood of a wheat streak mosaic complex outbreak during the subsequent season. Wheat-free windows are defined as the 30-day period prior to the start of the optimal winter wheat planting date for the region.**

Here are some important considerations for achieving success with wheat-free windows:

- All volunteer wheat should be terminated and completely dead prior to the start of your regional wheat-free window.
- Where possible, the fall wheat crop should not be planted until the end of the wheat-free window.
- Other winter cereals (such as rye and triticale) should not be planted during this period as they can serve as a "bridge" for the curl mites to fall-established wheat
- A regional "break" in the volunteer wheat green bridge will allow for wheat curl mites to die off prior to the start of the optimal wheat planting window.
- Volunteer wheat that emerges after this period is of less concern, as it will be emerging at a similar time as the fall-established winter wheat crop.
- Success is dependent on coordinated efforts in communities.

Revisiting herbicide recommendations for volunteer wheat management

The time it takes for wheat to die off after an herbicide application will influence the number of mites that persist over time and the ability of the mites to migrate off the slowly dying wheat. Research conducted at K-State demonstrates the difference in mite die-off time when glyphosate was compared with paraquat, for example (Figure 3).

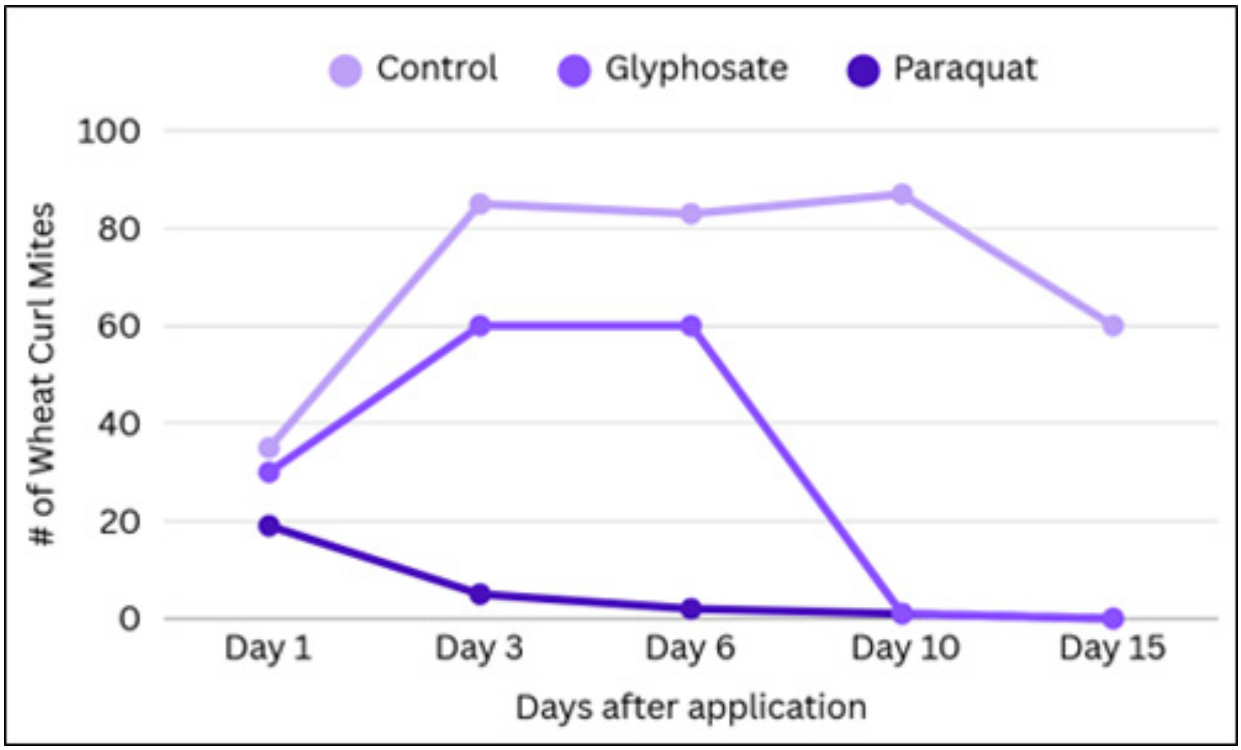

Figure 3. K-State research showing the number of curl mites over time in response to herbicide treatments under greenhouse conditions. Here, wheat was either not sprayed with an herbicide (control) or sprayed with either glyphosate (Roundup Ultra Max + ammonium sulfate) or paraquat (Gramoxone Max + NIS) (Jiang et al. 2005).

Glyphosate is the most recommended herbicide for volunteer wheat control in wheat stubble. While it is a very cost-effective option, it has a drawback in terms of managing the risk of wheat streak mosaic complex. As an amino acid inhibiting herbicide, glyphosate takes up to two weeks to kill plants, which means wheat curl mite populations will continue to build on glyphosate-treated volunteer wheat. Furthermore, the mites will have sufficient time to migrate to the tops of plants and assume a "dispersal posture" after a glyphosate application. Herbicides that act more rapidly, such as paraquat, are more effective at managing the wheat curl mite populations. Another option to increase the rate of desiccation would be to include saflufenacil (Sharpen) or tiafenacil (Reviton) in the glyphosate application.

Adding an herbicide with residual activity will also be helpful. Products that will control or suppress volunteer wheat include atrazine, metribuzin, sulfentrazone (Spartan), and flumioxazin (Valor). In addition to providing residual activity, atrazine and metribuzin can be used to enhance paraquat activity. More information about weed control in wheat stubble can be found in this recent eUpdate article: https://eupdate.agronomy.ksu.edu/article/post-harvest-weed-control-strategies-for-wheat-stubble-647-3. Tillage has also been shown to kill curl mites through the death of the green bridge host and could be considered as an option for volunteer management in cropping systems where that is appropriate.

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2. Control options for warm-season perennial grasses

Grass species such as tumble windmillgrass, tumblegrass, and purple three-awn are challenging to control when they have established a perennial stand. There is little information available for the control of tumblegrass or purple three-awn. However, previous research showed that tumble windmillgrass can be controlled with timely and proactive preemergence and postemergence herbicide programs applied to seedlings up to the tillering stage.

Figure 1. Tumble windmillgrass plants growing in a corn field. Photo by Jeremie Kouame, K-State Research and Extension

Control improves when seedlings and plants are sprayed at the tillering stage

Previous greenhouse research (early 2000s) showed that four weeks after treatment (4 WAT), Poast, Select Max, and Assure caused 100% tumble windmillgrass mortality when applied to 2- to 4-inch tall seedlings and greater than 90% injury when applied to plants at the tillering stage (5 to 10 tillers per plant) (Figure 2). Tumble windmillgrass injury increased with increasing the rate of glyphosate.

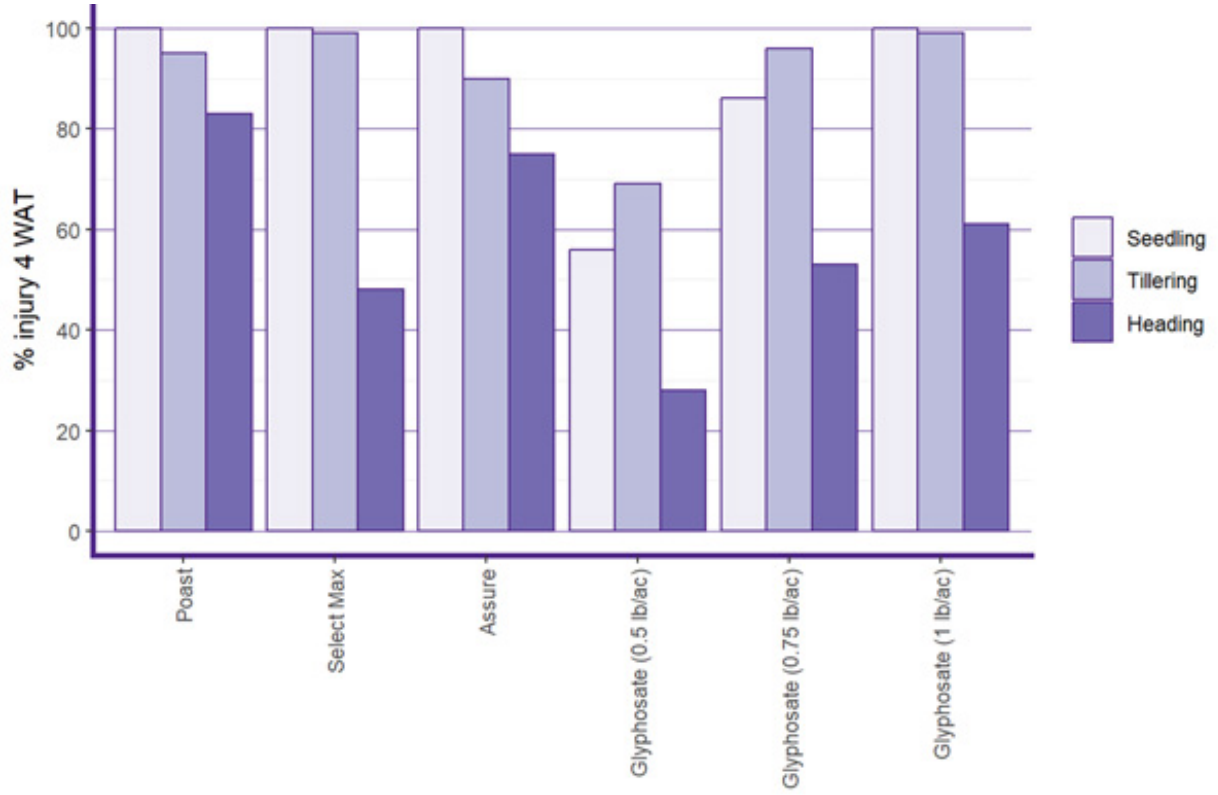

Figure 2. Tumble windmill injury 4 weeks after applications of glyphosate, Poast, Select Max, and Assure to seedling (2- to 4-inch tall), tillering (5 to 10 tillers per plant), and heading (when the first seed head is emerging) stages[1].

Herbicide programs for tumble windmillgrass control

Field research (2001 and 2002) with preemergence and postemergence (applied to 1- to 2-inch tall tumble windmillgrass seedlings) herbicides in no-till corn showed that:

- All PRE treatments provided at least 90% control of tumble windmillgrass each year at 6 WAT.
- All POST treatments provided at least 90% control of tumble windmillgrass in both years by 6 WAT, with the greatest control provided by the sequential application of glyphosate in both years.
- All herbicide treatments provided 100% control of tumble windmillgrass at corn harvest, except alachlor + atrazine, for which tumble windmillgrass control was 89%[1].

An ongoing study evaluated the impact of a fall application of either Callisto or Valor SX, followed by (*fb*) a spring application of Sinate, Select Max, Assure II, or RoundUp PowerMax III alone or a mixture of RoundUp PowerMax III and Select Max or RoundUp PowerMax III and Assure II. At the Southwest Research-Extension Center in Garden City, Callisto *fb* glyphosate alone or Callisto *fb* glyphosate + Assure II provided 86 to 89% control 5 weeks after the spring application. Valor *fb* glyphosate alone or Valor *fb* glyphosate + Assure II, or glyphosate + Select Max, provided 84 to 85% control. At the Agricultural Research Center in Hays, all herbicide programs that included a spring application of

glyphosate either alone or in a tank mixture provided an improved control 5 weeks after the spring application (86-89%). In contrast, control was lower when Assure II, Select Max, or Sinate alone were applied in the spring.

In another on-farm trial near Russell (data not published), two applications of clethodim provided the best control of tumble windmillgrass in both no-till and minimum-tilled plots. Tillage with a sweep plow provided enhanced control over no-till in the first year after tillage. However, tumble windmillgrass control was similar for all treatments after 18 months

Strategic tillage

Implementing one-time strategic tillage with the sweep plow in long-term no-till plots showed a significant reduction in the density of purple three-awn and tumble windmillgass, the two predominant perennial grasses at the site. It can be inferred that strategic tillage would be effective for all three of these grasses since they are most problematic on long-term no-till acres. However, it is unclear how frequently strategic or occasional tillage of no-till fields is required to keep them free of these perennial grasses. Observations suggest that one tillage pass every three or six years in summer fallow ahead of wheat is likely adequate. Tillage should be implemented with a sweep plow equipped with pickers on a hot, dry day for the most effective control.

Timely controlled burns

For tumblegrass, grazing has limited effectiveness as a management tactic due to its unpalatable nature. However, practices that avoid overgrazing can aid in preventing the invasion of all three of these perennial grasses in rangelands. Tumblegrass is a fire-adapted species; thus, burning is also not likely to be an effective control strategy. With regard to purple three-awn, research from USDA ARS has shown that under controlled conditions, burning killed 36% of the purple three-awn and reduced its biomass by 61%. The same authors reported that summer fires are more effective for suppressing purple three-awn compared to fall burns, particularly after a wet spring.

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 and follow all label instructions.

Sources:

[1]Hennigh et al. (2005), [2]Dhanda et al. (2023), [3]Obour et al. (2021)

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3. Corn leafhopper is now active in south central Kansas

Corn leafhopper (CLH; *Dalbulus maidis*), the vector of corn stunt disease complex, was confirmed in Reno County, Kansas, on July 9, 2025 (Figure 1). Corn leafhoppers have been detected in 38 counties in Texas, 3 counties in Oklahoma, and 1 county in Missouri. Now is the time to intensify scouting efforts.

The early insect onset we're observing this year raises concerns about yield loss. Late-planted corn and/or double-cropped corn are at a higher risk of yield impact than early-planted corn. Corn stunt disease symptoms can take up to 40 days for symptoms to become visible. Due to the efficiency of the corn leafhopper to transmit pathogens associated with corn stunt disease, there is no economic threshold.

At this time, the exact corn growth stage at which scouting should cease is unknown. Past guidance encouraged scouting through V8, but more studies are needed to verify the validity of this recommendation. Insecticide applications are an option when corn leafhoppers are detected. Broad-spectrum insecticides are suggested as the best option for CLH control; however, insecticides might not be a bulletproof option to prevent corn stunt disease due to the occurrence of multiple waves of CLH that may occur throughout the early growth stages. Keep in mind that spraying for CLH could increase the chances of spider mite infestations. In addition, corn stunt disease incidence will not be reduced by insecticide or fungicide applications. If symptomatic corn plants are observed in the field, the plants have already been infected. Remember, the label is the law.

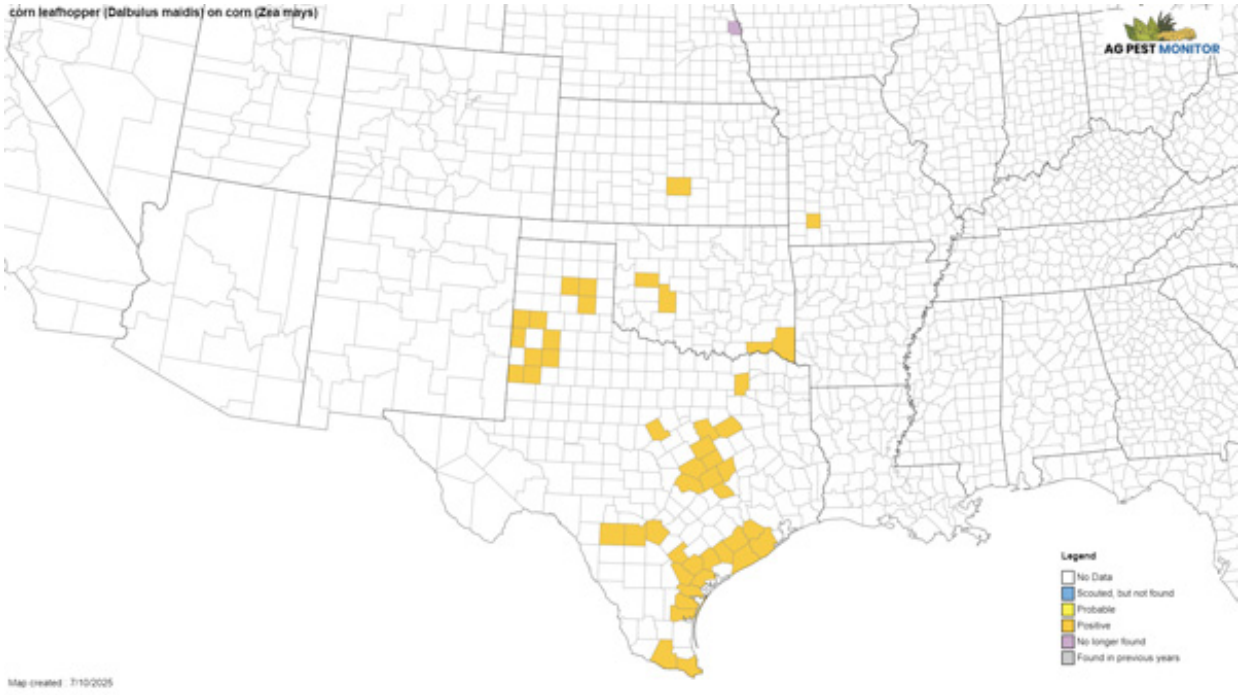

Figure 1. Corn leafhopper (Dalbulus maidis**) in Kansas in 2025. The map can be accessed at** https://kscorn.com/corndisease/

Identification of the corn leafhopper

The corn leafhopper is relatively simple to identify under magnification (Figure 2). These leafhoppers are light tan to yellowish-white in color and approximately 1/8" long. Two distinct dark spots between the antennae and eyes are very characteristic of this species. Nymphs lack wings and can vary in color.

Like most leafhoppers, all stages move quickly when disturbed and hide in shaded areas of corn plants. All stages can be sampled using a sweep net. A video showing how to sample/trap corn leafhoppers in mature corn canopies can be found here: https://youtu.be/QgLuWWSwHWU. It is important to know that not all leafhoppers found in corn fields will be corn leafhoppers. A commonly found species, the aster leafhopper, can be confused with the corn leafhopper (Figure 2, right).

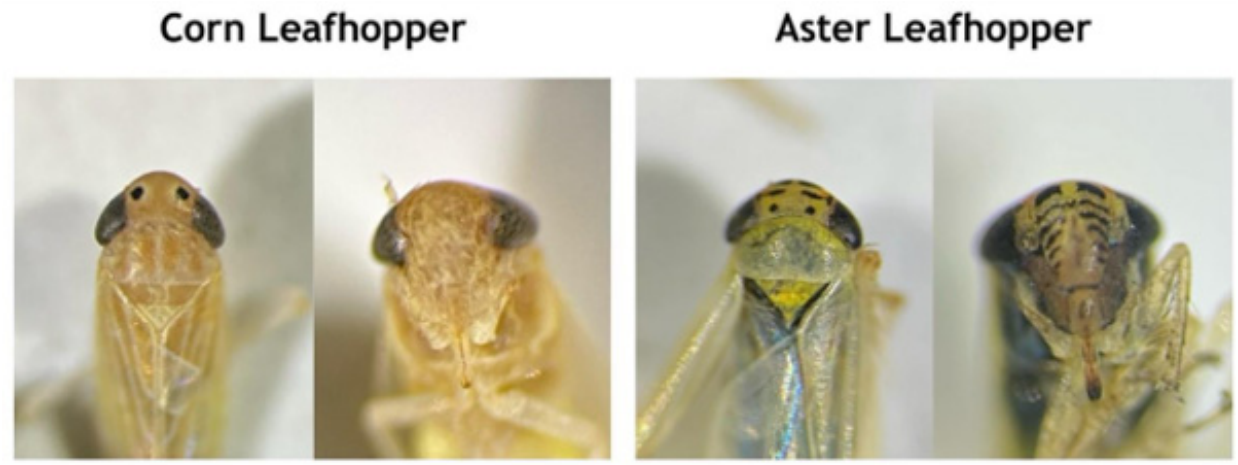

Figure 2. Images of the corn leafhopper (left) and the aster leafhopper (right). Photos courtesy of Rodrigo Onofre, K-State Research and Extension.

Corn stunt spiroplasma (CSS, *Spiroplasma kunkelii*) and its associated vector (corn leafhopper, *Dalbulus maidis*) were first confirmed in Kansas during the 2024 corn season. Although most of the positive reports were from field corn, we also confirmed CSS in sweet corn. High levels of disease were found in late-planted and double-cropped corn, leading to potential yield reductions. Corn leafhopper acquires pathogens within minutes of feeding on infected corn plants, but it can take up to 40 days for the leafhopper to be able to infect healthy corn plants during feeding events. The corn leafhopper can also transmit additional pathogens, either singly or in combination with CSS. To date, only the CSS pathogen has been confirmed in Kansas.

Please help us track! K-State is offering FREE TESTING for corn leafhopper identification and corn stunt disease.

Kansas corn farmers have new tools to guard against corn leafhoppers and corn stunt disease. The Kansas Corn Commission is supporting the work of K-State Plant Pathologist Rodrigo Onofre to track leafhoppers and corn stunt disease in Kansas to help growers manage this risk. In addition to the creation of a statewide system to track leafhopper infestations, K-State Plant Pathology is offering

FREE TESTING to identify corn leaf hoppers (CLH Confirmation and Pathogen Presence) and plant tissue testing for corn stunt disease, thanks to support from the Kansas Corn Commission. Collection and shipping instructions can be found below:

- Collect and ship samples on or before Wednesday to avoid weekend storage
- Collect symptomatic fresh leaf tissue.
- Use a sweep net to collect insects. Empty net into gallon plastic bags.
- Label and use plastic bags; Do not use paper bags, and do not add water.
- Fill out the submission form. Please make sure to add a **"2025 FREE CORN STUNT TESTING"** note to the submission form.
- Ship samples ASAP overnight via UPS or FedEx if possible.

K-State Plant Diagnostic Lab
4032 Throckmorton PSC
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K-Trap Monitoring System

Early detection of corn leafhoppers is a vital component of corn stunt management. To help communicate monitoring results in real-time, a monitoring system and webpage have been created to help growers track corn leaf hopper, corn stunt, and other corn diseases (kscorn.com/corndisease). A collaborative effort between K-State Plant Pathology, Agronomy, and Entomology departments, the Kansas Corn Commission, Kansas Independent Crop Consultants, K-State Research & Extension Ag Agents, and Corteva has been initiated to monitor at least three counties in each crop reporting district for corn leafhoppers (Figure 3).

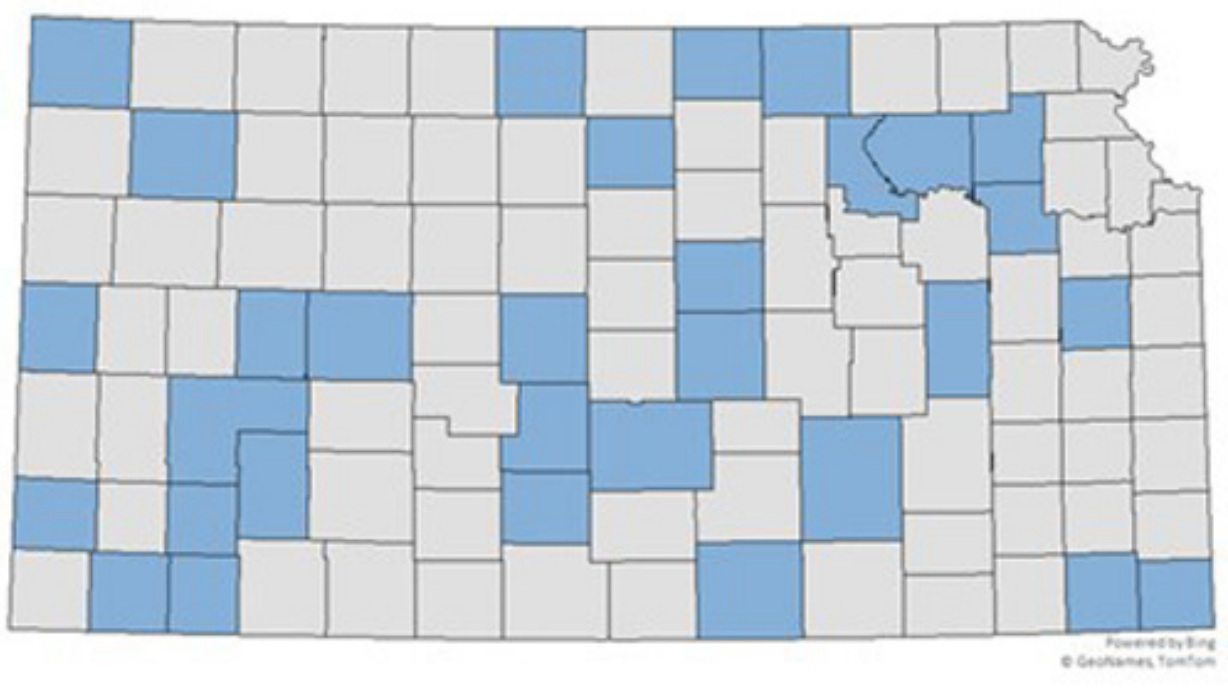

Figure 3. In-season K-Trap monitoring. Counties that are blue have at least one trap for CLH that is monitored weekly during the 2025 corn season.

Approximately 33 Kansas participants are trapping for the corn leafhopper. Monitoring is ongoing and will continue for 40 weeks. This will help us understand the real-time risk during the growing season. The leafhoppers that are trapped will be tested to see if they carry the pathogens that cause corn stunt disease. Any detections will be added to a map that tracks corn leafhopper detections in Kansas and other states (kscorn.com/corndisease). This page also includes maps for corn stunt pathogens, tar spot, and southern rust, as well as video updates from K-State Research and Extension.

For more information, contact Rodrigo Onofre, Assistant Professor and Extension Specialist, Row Crops Pathologist at the K-State Plant Pathology Department. E-mail: onofre@ksu.edu or at 785-477-0171.

Check out these short videos for answers to some common questions about corn stunt and leafhoppers

Learn the best way to scout your fields for corn leafhopper
www.youtube.com/shorts/_n7RZq0ougY

What next?
www.youtube.com/shorts/-PzNFirAGY0

Does corn stunt carry over in corn residue?
www.youtube.com/shorts/5rUZdi4CG3Q

Purple corn leaves – Is it corn stunt?
www.youtube.com/shorts/Jxkicq8DQfA

What other problems look like corn stunt?
www.youtube.com/shorts/dtjD8Wpip6A

How are sticky traps used to track corn leafhoppers?
www.youtube.com/shorts/DqLKsUI2xcs

Leafhopper project: What, Who, and Why?
www.youtube.com/shorts/XPEnmN05Nfc

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4. Tar spot update: Confirmed in Republic County for the first time

Tar spot of corn, a disease caused by the fungus *Phyllachora maydis*, was confirmed in Doniphan (6/11), Brown (6/17), Jefferson (6/23), Atchison (7/2), Republic (7/7), and Marshall (7/9) counties in Kansas (Figure 1). Now is the time to intensify scouting efforts. If you wait until there is significant disease pressure in the upper canopy, a fungicide application may be too late. The early disease onset we're observing this year raises concerns about yield loss. Generally, early observations of tar spot have corresponded with high yield loss.

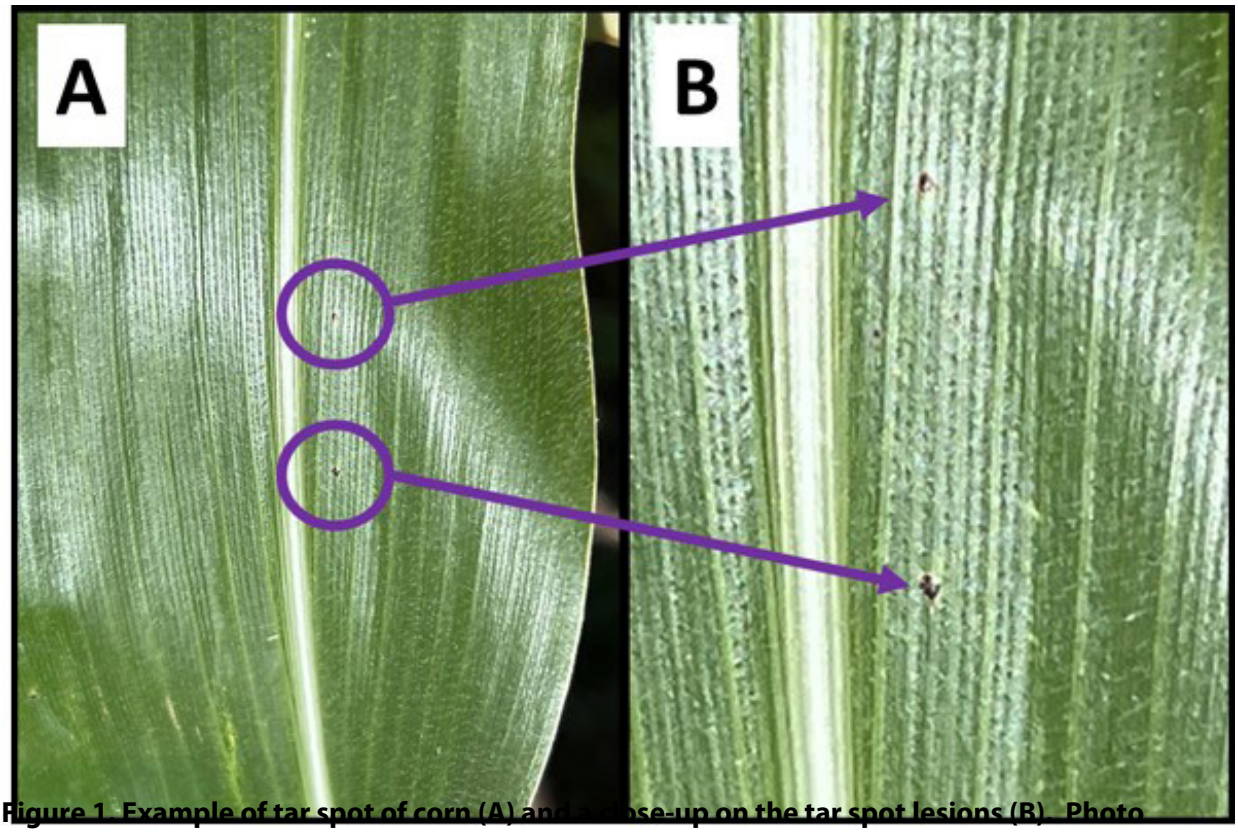

Figure 1. Example of tar spot of corn (A) and a close-up on the tar spot lesions (B). Photo courtesy of Rodrigo Onofre, K-State Research and Extension

Frequently Asked Questions about Tar Spot

How do I scout for Tar Spot?

Tar spot develops as small, black, raised spots (circular or oval) that develop on infected plants and may appear on one or both sides of the leaves, leaf sheaths, and husks. Spots may be found on healthy (green) and dying (brown) tissue. Tar spot can be easily confused with insect poop, which can appear as black spots on the surface of the leaf. If you would like assistance in confirming tar spot, you can contact Dr. Rodrigo Onofre at 785-477-0171, your local county extension office, or the K-State Plant Disease Diagnostic Laboratory at https://www.plantpath.k-state.edu/extension/plant-disease-diagnostic-lab/.

Is there a history of Tar Spot in this field or neighboring fields?

Tar spot overwinters on infested corn residue on the soil surface, which serves as a source of inoculum for the subsequent growing season. Spores can be dispersed by wind and rain splash, and can move to nearby fields if conditions are favorable.

What counties and when was Tar Spot reported in Kansas during the 2024 corn season?

During the 2024 corn season Tar spot was confirmed in Doniphan (5/27/2024), Atchison (6/4/2024), Jefferson (6/14/2024), Nemaha (6/18/2024), Brown (7/8/2024), Jackson (7/18/2024), Coffey (8/22/2024), Woodson (8/22/2024), Pottawatomie (8/23/2024), and Riley (9/18/2024) counties. Overall, during the 2024 season, Tar Spot prevalence and severity were much lower than in the 2023 season. However, several growers in the northeast part of Kansas reported severe yield impact.

What growth stage is the field?

Research has shown that making an application just after first detection and at or after VT is effective if lesions are detected early. If you wait until there is significant disease in the upper canopy, then a fungicide application may be too late. A guide for determining the growth stages in corn is available at https://bookstore.ksre.ksu.edu/pubs/MF3305.pdf.

How does moisture influence disease development?

The recent rains likely helped to promote tar spot development. Additionally, irrigated corn may be at particularly high risk for yield or silage loss. Forecasted rainfall and high humidity will favor tar spot development and spread.

Should I apply a fungicide?

Fungicides are an effective tool for controlling tar spot, if they are timed properly. Research has shown the best return on investment from a fungicide application on corn occurs when **fungal diseases are active** in the corn canopy. A **well-timed, informed fungicide application** will be important to reduce disease severity when needed, and we recommend holding off until the disease is active in your field and corn is at least V10 growth stage. Scouting will be especially important if wet weather continues. There are several fungicides that are highly effective at controlling tar spot when applied from tassel (VT) to R2 (milk). I would recommend picking a product with multiple modes of action. The National Corn Disease Working Group has put together efficacy ratings for fungicides labeled for the control of tar spot can be found at the Crop Protection Network website at https://cropprotectionnetwork.org/publications/fungicide-efficacy-for-control-of-corn-diseases.

If there is high disease pressure early in the season, a second application may be warranted. Fields should be scouted 14-21 days after the first application to see if the tar spot has become active again. Fungicides will not provide benefits after R5. Always consult fungicide labels for any use restrictions prior to application.

The new Crop Disease Forecasting tool on the Crop Protection Network, powered by the National Predictive Modeling Tool Initiative, provides weather-based forecasting and risk assessments for various crop diseases, helping farmers, crop advisors, and agricultural researchers to make data-driven decisions. This free resource forecasts the risk of key foliar diseases by feeding local weather data into the validated models (https://connect.doit.wisc.edu/cpn-risk-tool/). Risk levels are updated daily based on recent weather conditions. Also, this tool provides a 7-day forecast to assist in

planning ahead of incoming weather events.

Where has tar spot been reported in the 2025 season?

In cooperation with K-State Plant Pathology Department, the Kansas Corn Commission has launched an online Corn Disease Resource Center (https://kscorn.com/corndisease/) to help corn growers identify what diseases to watch for in their geographic area. Tar Spot is active in Doniphan (6/11), Brown (6/17), Jefferson (6/23), Atchison (7/2), Republic (7/7), and Marshall (7/9) counties (Figure 2).

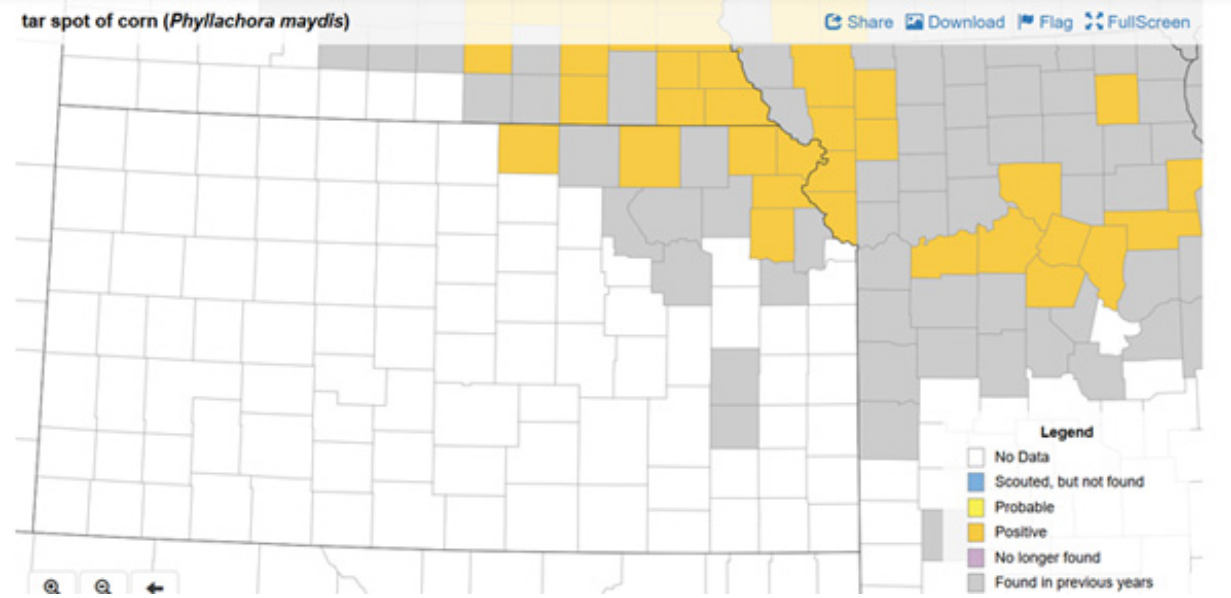

Figure 2. Tar Spot of Corn (Phyllachora maydis**) in Kansas in 2025.**
Source: https://kscorn.com/corndisease/

Please help us track tar spot!

If you suspect a field has tar spot, contact Rodrigo Onofre directly at 785-477-0171 and/or submit a sample to the K-State Plant Disease Diagnostic Lab at https://www.plantpath.k-state.edu/extension/diagnostic-lab/documents/2021_PP_DiseaseLabChecksheet.pdf.pdf. This will help us monitor the situation in the state.

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5. 2025 Kansas Performance Tests for winter wheat varieties

Results from the 2025 Kansas Performance Tests for winter wheat are now available online. These tests provide valuable, unbiased data to help Kansas producers and crop consultants select wheat varieties best suited for their specific regions and cropping systems.

Current yield data for the 2025 wheat harvest can be found on the K-State Agronomy Crop Performance Tests website:
https://www.agronomy.k-state.edu/outreach-and-services/crop-performance-tests/wheat/

So far, results have been posted for several locations across Kansas, with additional locations to be added as data becomes available.

Each site report includes:

- A detailed site description
- Precipitation summary
- Fertilizer and herbicide inputs
- Key growing season notes
- Yield performance data

Archived results from previous years are also available for reference.

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6. National soybean survey: K-State researchers request your input

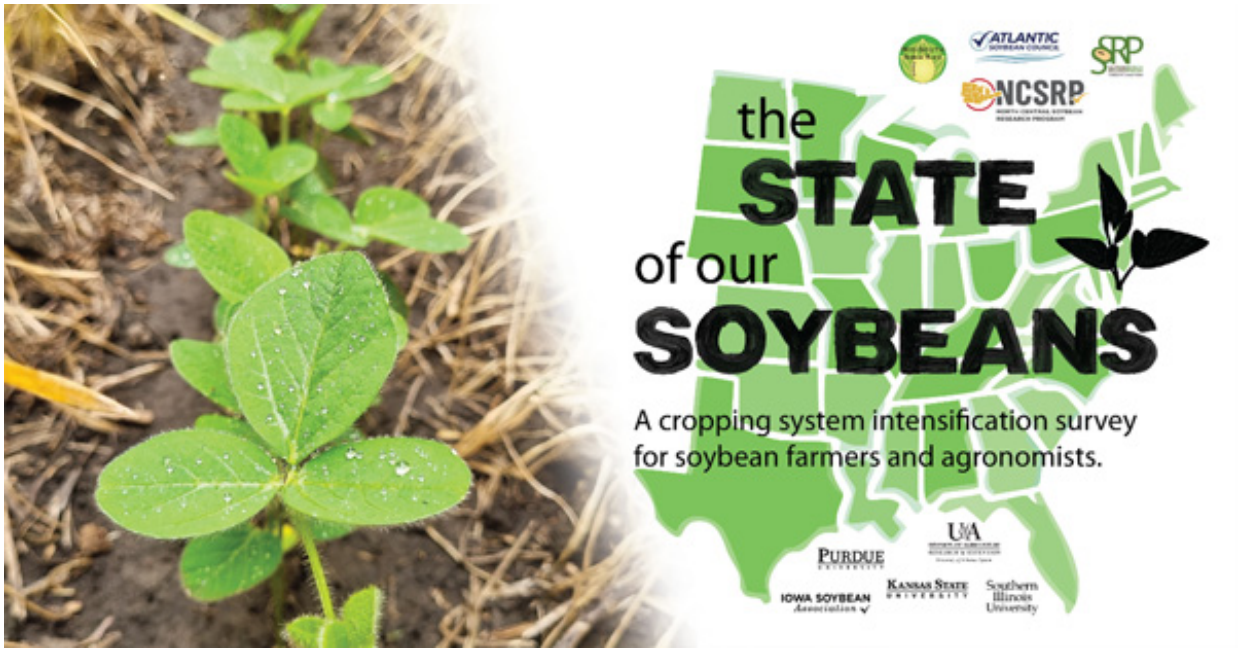
Are you a farmer or agronomist who works with soybeans?

Do you manage double-cropped, intercropped, or otherwise intensified soybean systems?

Do you have weed management concerns and struggles in your soybeans?

If you answered "yes" to any of these, we need your help and want to hear from you!

Soybeans are an important crop in Kansas, and we want to make sure our state is represented in this national survey of soybean growers! This survey is also a "friendly" state-to-state competition with responses, and our Kansas crew wants to win, of course.



Agricultural scientists from Kansas State University, Purdue University, the University of Arkansas, Southern Illinois University Carbondale, and the Iowa Soybean Association (in collaboration with the checkoff-funded North Central, Mid-South, South, and Atlantic soybean regions) would like your help in gathering soybean management information, perspectives on intensification methods (including double cropping and intercropping), and economics regarding these management strategies.

We would appreciate your taking the time to complete a 15 to 20-minute Qualtrics survey regarding these concepts. The survey includes questions detailing production information (including agronomic and weed-control practices) for various soybean-based production systems, perspectives on intensification methods (including double cropping and intercropping), and the economics associated with such practices.

Please click on the link below or scan the QR code to access the survey. It should take approximately 15-20 minutes to complete.

https://bit.ly/soy-survey

How will this survey information be used?

Information gathered from the survey will provide direct insights into current soybean management practices across the United States, awareness and experience with intensification strategies in different cropping systems, and perspectives of economic and production benefits of these strategies by region. This will allow the researchers to better understand soybean intensification needs and opportunities to prioritize future research, teaching, and Extension efforts.

Confidentiality information

If you do choose to participate, we appreciate your feedback, and all information will be kept confidential to the extent allowed by applicable State and Federal law. No names, contact information, precise locations, or computer IP addresses will be collected. By completing the survey, you are agreeing to allow the use of your responses for research purposes. If you do not wish to complete the survey, your refusal to do so will have no effect on your relationship with the universities or entities listed. To opt out of taking the survey, simply do not complete the survey. Response volume updates by state and more information are available here: https://bit.ly/soy-survey-info.

If you have questions or concerns about this study, you may contact Dr. Rachel Cott (785-532-5402, email rveenstra@k-state.edu), Dr. Elizabeth (Beth) Yeager (785-532-4935, email eyeager@k-state.edu), or Dr. Thomas (Tommy) Butts (765-494-0598, email buttst@purdue.edu). If you have questions about your rights while taking part in the study or have concerns about the treatment of research participants, please call the Kansas State University Committee on Research Involving Human Subjects at 785-532-3224, email (comply@k-state.edu) or write to: Committee on Research Involving Human Subjects – K-State, 1601 Vattier St., Fairchild Hall #203, Manhattan, KS 66506-1100. To report concerns anonymously online, see https://www.k-state.edu/internalaudit/anonymous-hotline/.

Thank you for taking the time to complete the survey, and we look forward to your insightful responses. If you have any questions while taking the survey, please feel free to contact us at the email(s) or phone number(s) listed below.

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