Issue 1060

K-STATE Research and Extension

Extension Agronomy

eUpdate

07/03/2025

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. Managing weeds in non-glyphosate-tolerant cotton

In 2023, Corteva's US cottonseed brand, Phytogen, released a new GM cotton trait package, W3E1, targeting the southwest Cotton Belt region (Kansas, Oklahoma, Texas, and New Mexico). This trait package includes WideStrike 3 for lepidopteran pest resistance as well as tolerance to Enlist One (2,4-D) and glufosinate. However, this trait package differs from the W3FE trait package Kansas cotton growers are used to in that it does not include tolerance to glyphosate. The varieties available in the 2025 growing season are PHY 136 and PHY 137. PHY 136 is an early-to-mid-maturing variety, and PHY 137 is very early maturing. Some estimate these two varieties could occupy as much as 30% of the planted acres in Kansas in 2025.

Why consider non-glyphosate-tolerant cotton?

The primary motivation for producers to try these new varieties is reduced seed costs ($100/bag savings) as the technology fee for glyphosate tolerance is omitted from the total seed cost. As seed cost is one of the greatest annual expenses in cotton production, this could be a significant cost-saving opportunity, which may be especially advantageous given current profit margins. Additionally, non-glyphosate-tolerant cotton production systems open up the opportunity for using glyphosate to control volunteer cotton in other phases of the crop rotation.

Considerations for grass and sedge control in non-glyphosate-tolerant cotton

Due to widespread glyphosate resistance in key weed species such as Palmer amaranth and kochia, the greatest weed control "loss" resulting from not spraying postemergence glyphosate will be grass control (Figure 1). However, grass control in cotton can be achieved by using Group 1 (ACCase-inhibiting) herbicides such as clethodim (SelectMax, others) or quizalofop (Assure II, others), sethoxydim (Poast), or fluazifop (Fusilade DX). Glufosinate (Liberty, others) also has activity on grasses; however, it is less effective than glyphosate or a Group 1 product.

Figure 1. An infestation of johnsongrass in a cotton field in southwest Kansas. Photo by Logan Simon, K-State Research and Extension.

In situations where glyphosate was used to control nutsedge species, trifloxysulfuron (Envoke) will provide some control. Nutsedge control will likely be improved by the addition of S-metolachlor (Dual, others) before weeds emerge.

Table 1. Grass response to selected cotton herbicides when applied according to label directions.

Herbicide	Barnyardgrass	Crabgrass	Fall panicum	Foxtail	Johnsongrass (perennial)
Assure II	E	E	E	E	G-E
Clethodim	G	E	E	E	G-E
InterMoc (glufosinate-resistant cotton only)	G	G	G	G	F-G
Liberty and other glufosinate products (resistant cotton only)	G	G	G	G	F-G
Poast	E	E	E	E	G

*E=Excellent, G=Good, F=Fair, P=Poor, and – weed not listed on the herbicide label.

Glyphosate injury to non-glyphosate-tolerant cotton

An added concern in non-glyphosate-tolerant cotton production systems is the potential for glyphosate injury due to misapplication, tank contamination, and drift. When weed scientists in North Carolina sprayed 4-leaf cotton with drift rates of glyphosate, they reported a maximum of 13% yield loss following application of a 1/10 rate of glyphosate, with less than 1% yield loss caused by the 1/100 rate. However, at higher glyphosate rates (1/4 and 1/8 rates), cotton lint yield was reduced even though no visible injury was reported 7 weeks after application. Reductions were attributed to reduced boll set or delayed maturity. However, factors other than glyphosate rate can influence cotton yield loss caused by drift. Research conducted in Texas suggests that cotton yield loss is more likely when drift occurs during reproductive growth stages, and cotton yield loss was greater in high-yielding environments than locations with drought stress in the North Carolina study.

More information about weed management in cotton can be found in the "2025 Chemical Weed Control for Field Crops, Pastures, and Noncropland" guide at https://www.bookstore.ksre.ksu.edu/pubs/CHEMWEEDGUIDE.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.

Sarah Lancaster, Extension Weed Science Specialist
slancaster@ksu.edu

Logan Simon, Southwest Area Agronomist, Garden City
lsimon@ksu.edu

2. Late-season herbicide applications in corn

Some questions have recently been asked regarding herbicide options for corn in later vegetative stages. While early-season weed control is critical to protect yield potential, in some situations, late-season weed control may be needed to protect yield, prevent harvest difficulties, and reduce additions to the weed seed bank.

Table 1 lists products that can be applied to corn over 12 inches tall to control emerged weeds. Note that some of these products recommend or require drop nozzles to reduce crop injury and get better spray coverage on weeds that are shorter than the crop. Also of note, strategies for more successful herbicide applications in high temperatures were discussed in a previous eUpdate article.

Table 1. Herbicides labeled for corn over 12 inches tall to control emerged weeds.

Herbicide (group)	Product	Maximum corn height or stage	Comments
Glufosinate (10)	Liberty, others	V6	
Tolpyralate (27)	Shieldex	V6 or 20 inches	Can mix with Tough to enhance control
Clopyralid (4)	Stinger, others	24 inches	Fair to good pigweed control
Topramezone (27)	Armezon, Impact	V8	Can mix with Tough to enhance control
Pyridate (6)	Tough	V8	Can be used to enhance Group 27 herbicides
Mesotrione (27)	Callisto, others	V8 or 30 inches	Can mix with Tough to enhance control
Glyphosate (9)	Many	V8 or 30 inches	RR2 hybrids use drop nozzles 30 to 48 inches
Nicosulfuron (2)	Accent	36 inches	Use drop nozzles >20 inches
Tembotrione (27)	Laudis	V9	Can mix with Tough to enhance control
Carfentrazone (14)	Aim	14 leaves	Use drop nozzles > 8 leaves
Bromoxynil (6)	Moxy, others	tasseling	Fair pigweed control
Dicamba (4)	Clarity others	tasseling	Fair to good crop safety
	DiFlexx	V10	Good crop safety
	Status	V8 or 30 inches	Good to excellent crop safety
2,4-D (4)	Amine or ester	tasseling	Use drop nozzles if corn >8"
	Enlist One	V8 or 30 inches	Enlist corn hybrids only

For more detailed information, see the "2025 Chemical Weed Control for Field Crops, Pastures, and Noncropland" guide available online at https://www.bookstore.ksre.ksu.edu/pubs/CHEMWEEDGUIDE.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. Users should read and follow all label directions.

Sarah Lancaster, Weed Science Extension Specialist
slancaster@ksu.edu

3. Tar Spot is active in four northeast counties in Kansas

Tar spot of corn, a disease caused by the fungus *Phyllachora maydis*, was confirmed in Doniphan (6/11), Brown (6/17), Jefferson (6/23), and Atchison (7/2) counties, 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. Fields scouted this week were approaching tasseling (VT) growth stage, which increases the risk for disease spread and development. The recent rains likely helped to promote tar spot development.

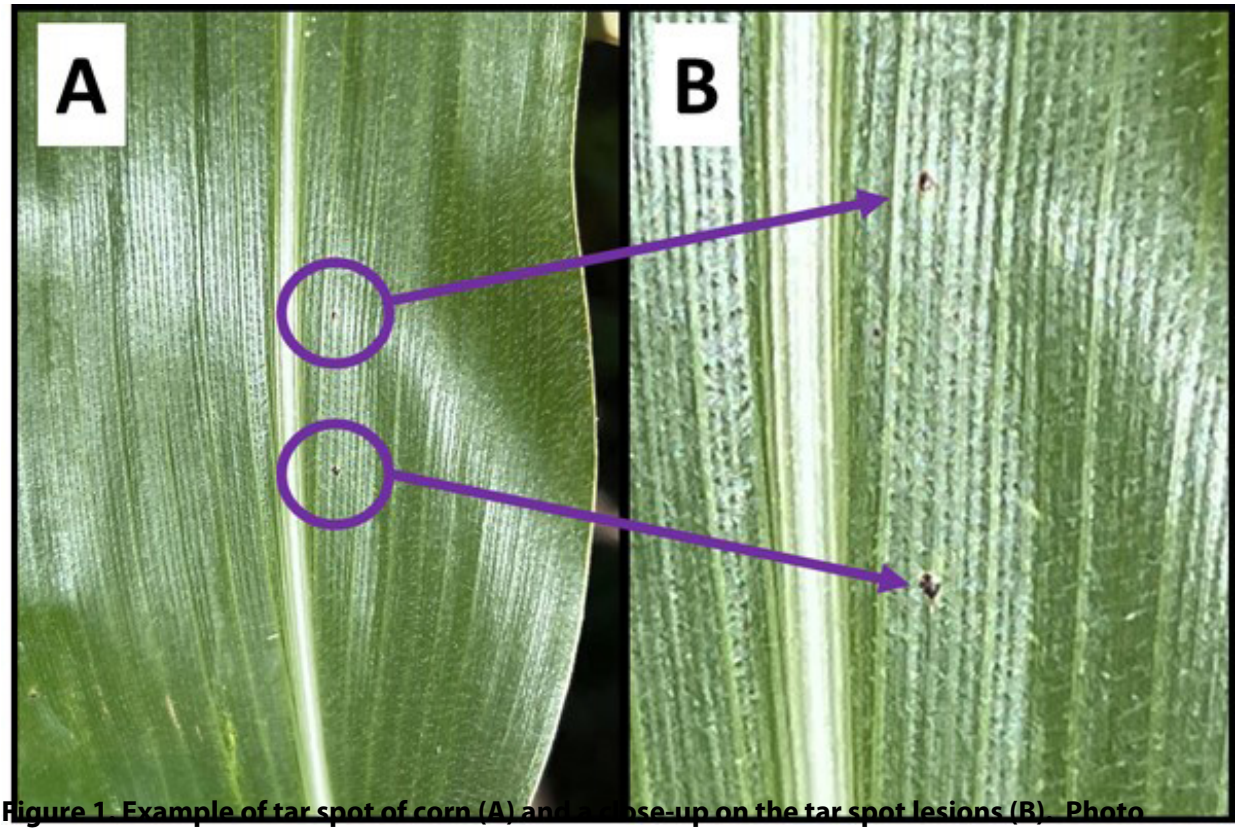

Figure 1. Example of tar spot of corn (A) and a close-up on the tar spot lesions (B). Photo courtesy of Rodrigo Onofre, K-State Research and Extension

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 that 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.

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, Brown, Jefferson, and Atchison counties in Kansas (Figure 2).

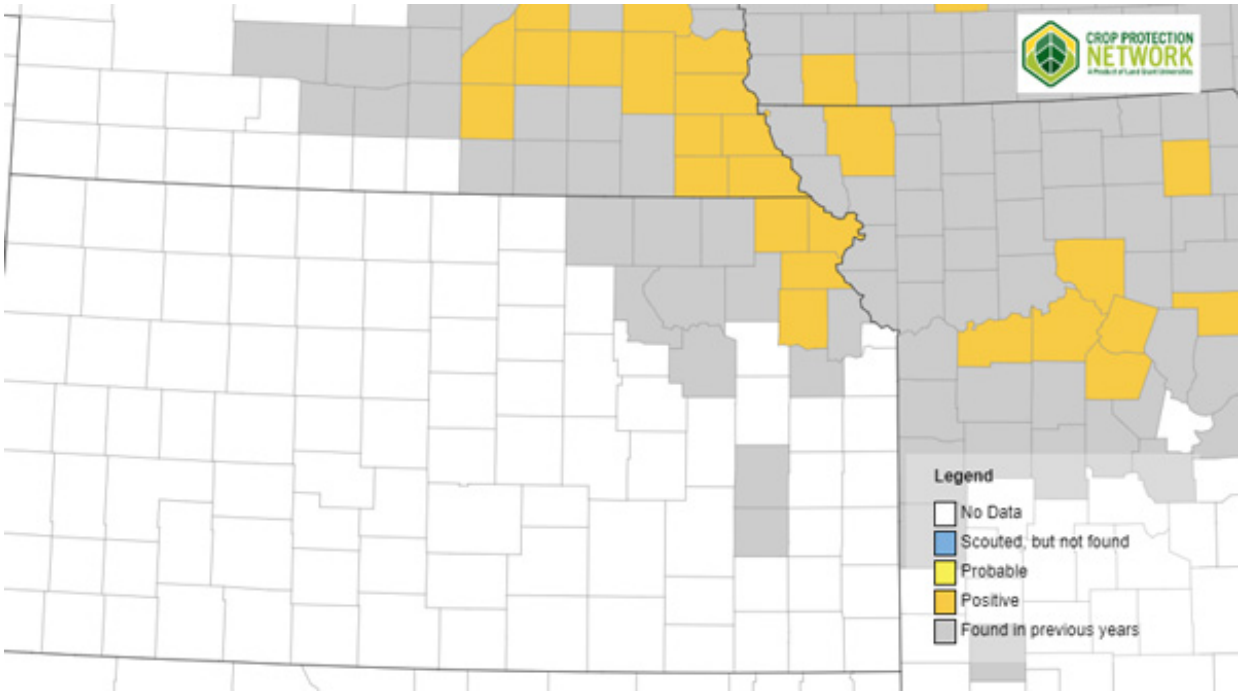

Figure 2. Tar Spot of Corn (Phyllachora maydis**) in Kansas in 2025.**
Source: https://cropprotectionnetwork.org/

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.

Rodrigo Onofre, Row Crop Plant Pathologist
onofre@ksu.edu

4. Cotton fleahopper and lygus bug management in cotton

As cotton in Kansas begins setting squares, our attention shifts from monitoring thrips to monitoring cotton fleahoppers and lygus bugs (also known as tarnished plant bugs). Cotton should be scouted for these insects from the six-leaf stage until square production stops. Feeding damage from fleahoppers and lygus bugs is very similar and both cause squares to drop (Figure 1).

Figure 1. Missing squares as a result of cotton fleahopper/lygus bug damage. Photo courtesy of Rex Friesen.

Scouting for cotton fleahoppers and lygus bugs

Cotton fleahoppers are 1/8-inch long and yellowish-green insects with an elongated, oval-shaped body that is slightly flattened over the top (Figure 2). Adult fleahoppers have a few dark spots near the rear of the upper surface of the back. Fleahopper nymphs are small and white to light green. Begin scouting for fleahoppers when cotton reaches the six-leaf stage. Alternate hosts are croton and silverleaf nightshade, so damaging infestations are more likely where these weeds are abundant. If small squares (immature flower buds) turn brown and drop to the ground (Figure 1), the damage may be caused by fleahoppers. If more than 10 to 20% of small squares are lost in pre-bloom cotton, plants should be examined for the presence of fleahoppers.

Figure 2. Adult cotton fleahopper (left) and lygus bug (right). Photo courtesy of J.P. Michaud, K-State Research and Extension.

Scouting for cotton fleahoppers may be difficult because adults jump from plants if they see a shadow. During the first three weeks of squaring, the economic threshold is approximately 25 to 40 fleahoppers per 100 terminals with 10 to 15% blasted squares. Other sampling techniques involve the use of a drop cloth or sweep net. When sampling with a drop cloth, place the drop cloth between the rows, and shake plants vigorously over the cloth. Treatment should be considered when counts range between one and three fleahoppers per foot of row. With a sweep net, the threshold ranges between 1 and 1.5 fleahoppers per 10 sweeps. These insects attack the most immature squares, so if 75% or more squares are retained, there is probably not a significant fleahopper population present.

Lygus bugs may present another problem for Kansas cotton growers, especially where cotton is located close to alfalfa. Lygus bug adults are approximately 1/4-inch long and 1/8-inch wide with flat, yellowish-brown bodies and reddish-brown and black mottling (Figure 2). Adults have a conspicuous yellow Y-shaped marking. Watch for lygus bugs to move into cotton fields following alfalfa cuttings, which occurs at about the same time as fleahoppers. Alfalfa can be a significant reservoir for lygus bugs. According to some references, one lygus bug equals about three fleahoppers.

Control options

In most cases, the limited potential for late-developing squares to enhance cotton lint and seed yields, coupled with the chance of unleashing bollworms by killing beneficial insects, offsets the advantages of protecting late squares if a late-season fleahopper or lygus bug infestation occurs. Where significant numbers of fleahoppers or lygus are found, use insecticides that have the least effect on beneficial arthropods, because they are important for suppression of bollworms later in the season. Use lower rates and do not worry if you do not achieve 100% control. Many insecticides listed for fleahoppers are labeled for lygus bugs (Table 1).

Table 1. Insecticides labeled for fleahopper and lygus bug control in cotton.

Chemical Name	Product(s)
Acephate	Acephate, Bracket and Orthene
Acetamiprid	Intruder and Assail
Alpha-cypermethrin	Fastac CS (2.6 to 3.6 fl. oz./acre)
Beta-cyfluthrin*	Baythroid XL
Bifenthrin*	Numerous products including Annex, Bifenthrin, Brigade, Discipline, Empower 2, Fanfare, Sniper, and Tundra
Bifenthrin + abamectin	Athena
Bifenthrin + chlorantraniliprole	Elevest
Bifenthrin + imidacloprid	Brigadier and Tempest
Bifenthrin + zeta-cypermethrin	Hero
Chlorpyrifos	Multiple products
Chlorpyrifos +lambda-cyhalothrin	Cobalt Advanced
Chlorpyrifos+zeta-cypermethrin	Stallion
Cyfluthrin + imidacloprid	Leverage
Cypermethrin*	Ammo
Deltamethrin*	Delta Gold
Dicrotophos	Bidrin
Dimethoate	Dimate and Dimethoate
Endosulfan	Endosulfan, Phaser and Thionex
Esenfenvalerate*	Asana XL
Flonicamid	Carbine
Gamma-cyhalothrin*	Proaxis
Imidacloprid	Alias 4F, Couraze 1.6F, Imida E-AG 4F, Nuprid, Pasada, Provado, Sherpa, and Widow
Indoxacarb	Steward
Kaolin	Surround
Lambda-cyhalothrin*	Numerous products including Warrior II with Zeon Technology, Silencer, Taiga Z, and Lambda T
Lambda-cyhalothrin + chlorantraniliprole	Besiege
Lambda-cyhalothrin + thiamethoxam	Endigo ZC
Methamidophos	Monitor
Methomyl	Lannate LV and Lannate SP
Novaluron	Diamond
Oxydemeton	MSR and Metasystox-R
Oxamyl	Vydate
Phosmet	Imidan
Potassium salts of fatty acids	M-Pede
Thiamethoxam	Centric
Thiodicarb	Larvin
Zeta-cypermethrin*	Mustang MAXX, etc.

*Pyrethroid insecticides should be used judiciously, especially if there is a chance that they will be needed to control bollworms later in the season.

Other mid-season insect pest considerations for cotton

The bollworm (corn earworm or sorghum headworm) is a serious pest across much of the US cotton belt. However, damage has been limited in Kansas even when significant infestations have developed in corn and grain sorghum. Growers should watch for developing infestations during fruiting and boll development. Bollworm management is based on scouting for eggs or small larvae. In non-Bt cotton, treatment is recommended when 10 eggs or five small worms per 100 plants are present during early bloom in late July and early August. The use of Bt cotton (WideStrike® 3) in Kansas is common. However, bollworm resistance to currently used Bt traits has been documented. It may take up to five days from the time of ingestion to the time of death when susceptible bollworms feed on Bt cotton. Bt cotton should be scouted every 2 to 3 days to determine if young bollworms are

being controlled. Consider spraying if fruit and boll damage are excessive, as indicated by 10 small worms (1/4- to 3/8-inch long) per 100 plants or six small worms in 100 flowers.

For more information on insect pest management in cotton, see the 2025 Cotton Insect Pest Management bulletin available from the KSRE Bookstore.

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 insecticide label for the most current use requirements.

Logan Simon, Southwest Area Agronomist – Garden City
lsimon@ksu.edu

Anthony Zukoff, Extension Entomologist – Garden City
azukoff@ksu.edu

5. Western bean cutworms are active in western Kansas

Western bean cutworms are primarily a pest of corn in Kansas, and activity is generally isolated to the western part of the state (Figure 1). This pest overwinters as prepupa in the soil in earthen cells about 3 to 9 inches deep. The moths begin emerging in southwestern Kansas in mid-June and in early July for northwestern Kansas, usually around the time that corn is close to tasseling. White eggs are laid in masses on the upper surface of leaves and gradually turn purple as they get closer to hatching (Figure 2). After about a week, the eggs hatch and caterpillars (Figure 3) enter corn ears to feed on the developing kernels. Mature caterpillars exit the corn ears and enter the soil to overwinter. There is a single generation of this pest each year.

Pheromone trap counts of western bean cutworm moths are not a metric for determining losses in corn, but can be utilized to help detect when moths start to emerge from the soil in order to properly time scouting efforts. Early detection of egg masses is important, as any chemical control, if warranted, needs to happen before larvae enter corn ears. When the field is almost fully tasseled, an average of 6-8% of plants with eggs or small caterpillars justifies control measures. Control will be reduced if applications are delayed until all silks have emerged or if larvae have already entered the ear tips.

Figure 1. Adult western bean cutworm moth. Photo by Adam Sisson, Iowa State Univ., Bugwood.org

Figure 2. Maturing western bean cutworm eggs. Photo from Marlin Rice.

Figure 3. Western bean cutworm caterpillar. Photo from K-State Entomology.

Currently, trap counts indicate that the western bean cutworm flight is light in southwest Kansas and began slightly later than in 2024. In northwest Kansas, trap counts of adult moths have been increasing over the last several weeks. The moth flight should conclude in early August. Until then, any at-risk fields should continue to be scouted.

Control options and additional information on western bean cutworm can be found in the 2025 Corn Insect Pest Management Guide: https://www.bookstore.ksre.ksu.edu/pubs/MF810.pdf.

Anthony Zukoff, Extension Entomology – Garden City
azukoff@ksu.edu

6. Kansas paraquat training information for 2025

This article answers frequently asked questions about paraquat dichloride training for certified applicators.

Do all paraquat dichloride product labels require the additional training?

All products featuring labeling with the active ingredient paraquat dichloride, such as Gramoxone, Firestorm, Helmquat, and Parazone, will require the additional training in order to apply these products. Remember, if the new training requirement is listed on the label of the product you are using, then you MUST complete the training.

Who is required to take this training?

Any person who intends to use paraquat must be a certified applicator and is required to take this training.

How often am I required to receive the training?

The training is required every three years. Check to make sure your training is current!

Do I need to be certified to use products containing paraquat dichloride?

These labeled products state that "Product may ONLY be mixed, loaded or applied by a certified applicator who has successfully completed the paraquat-specific training before use. **Application "under direct supervision" of a certified applicator is NO LONGER allowed.** In the state of Kansas, this means that everyone purchasing and using these products has to either obtain a private applicator license (application to agricultural lands owned or operated by individual) or a commercial applicator license (applicators applying to other people's land for compensation). If you have been applying under someone else's license in the past, you will need to get your own license before applying these products.

How can I complete the training requirements?

The National Pesticide Safety Education Center discontinued online and in-person Paraquat Dichloride Training for Certified Applicators as of April 15, 2025. Please utilize the Syngenta Crop Protection's Paraquat Training at Syngenta E-Learning Modules. Take note that in order to register, you will need your pesticide application license number.

This information is made available by the K-State Pesticide Safety and IPM Program. Contact your local Extension Office if you need any additional information.

Frannie Miller, Pesticide Safety and IPM Coordinator
fmiller@ksu.edu

Sarah Lancaster, Extension Weed Science Specialist
slancaster@ksu.edu

7. Don't miss the 2025 K-State/KARA Summer Field School

Kansas State University and the Kansas Agribusiness Retailers Association (KARA) are hosting two 2-day Summer Field School sessions on July 8–9 and July 10–11, 2025, at the K-State Agronomy Education Center (2213 Agronomy Farm Road), located just north of the K-State football stadium in Manhattan.

This year's program will spotlight soybean and cotton production, with comprehensive, hands-on sessions covering:

- Crop growth and soil fertility for soybeans and cotton production
- Herbicide symptomology and glufosinate optimization
- Weed identification
- Precision agriculture
- Soil health
- Crop diseases and insect management

Agendas for both sessions are included at the end of this article.

Registration Information

- **2-day program:** $220 (includes lunch both days)
- **1-day option:** $135 (includes lunch for that day)
- Earn multiple CCA and 1A credits (exact credit total forthcoming)

The complete program overview and registration link are available at the K?State Agribusiness Retailers site: https://www.ksagretailers.org/events-training/ksu-field-days/

Lodging & Details

Lodging options and additional information are listed on the registration page.

Note for KSRE agents: A special registration link has been sent to you. Please use that link.

Peter Tomlinson, Environmental Quality Specialist
ptomlin@ksu.edu

Kansas State University/KARA Summer Field School (Session 1)

North Agronomy Farm, Manhattan, July 8-9, 2025

K-STATE Research and Extension

	Tuesday 7/8/2023		
7:45 AM	Registration – **North Agronomy Farm**		
8:20 AM	Welcome, Instructions		
	Group A	**Group B**	**Group C**
8:45 AM	**Crop Insect Pests** (Whitworth)	**Weed ID** (Dille & Cott)	**Cotton/Soybean Growth & Development** (Simon & Sullivan)
9:35 AM	**Crop Diseases** (Onofre)		
10:25 AM	**Break**		
10:40 AM	**Weed ID** (Dille & Cott)	**Cotton/Soybean Growth & Development** (Simon & Sullivan)	**Crop Insect Pests** (Whitworth)
11:30 AM			**Crop Diseases** (Onofre)
12:20 PM	**Lunch – North Agronomy Farm**		
1:10 PM	**Cotton/Soybean Growth & Development** (Simon & Sullivan)	**Crop Insect Pests** (Whitworth)	**Weed ID** (Dille & Cott)
2:00 PM		**Crop Diseases** (Onofre)	
2:50 PM	**Adjourn**		
	Wednesday 7/9/2023		
7:00 AM	Registration – **North Agronomy Farm**		
	Group A	**Group B**	**Group C**
7:30 AM	**Cotton/Soybean Fertility and Production** (Ruiz Diaz, Simon & Sullivan)	**Herbicide Symptomology** (Lancaster)	**Precision Ag** (Joshi)
8:20 AM		**Optimizing Glufosinate** (Lancaster)	**Soil Health** (Obour)
9:10 AM	**Break**		
9:25 AM	**Precision Ag** (Joshi)	**Cotton/Soybean Fertility and Production** (Ruiz Diaz, Simon & Sullivan)	**Herbicide Symptomology** (Lancaster)
10:15 AM	**Soil Health** (Obour)		**Optimizing Glufosinate** (Lancaster)
11:05 AM	**Lunch – North Agronomy Farm**		
11:55 AM	**Herbicide Symptomology** (Lancaster)	**Soil Health** (Obour)	**Cotton/Soybean Fertility and Production** (Ruiz Diaz, Simon & Sullivan)
12:45 PM	**Optimizing Glufosinate** (Lancaster)	**Precision Ag** (Joshi)	
1:35 PM	**Break**		
1:50 PM	**Core Hour**		
2:40 PM	**Adjourn**		

Kansas State University/KARA Summer Field School (Session 2)

North Agronomy Farm, Manhattan, July 10-11, 2025

K-STATE Research and Extension

	Thursday 7/10/2023		
7:45 AM	Registration – **North Agronomy Farm**		
8:20 AM	Welcome, Instructions		
	Group A	**Group B**	**Group C**
8:45 AM	**Cotton/Soybean Fertility and Production** (Ruiz Diaz, Simon & Sullivan)	**Herbicide Symptomology** (Lancaster)	**Precision Ag** (Joshi)
9:35 AM		**Optimizing Glufosinate** (Lancaster)	**Soil Health (Obour)**
10:25 AM	**Break**		
10:40 AM	**Precision Ag** (Joshi)	**Cotton/Soybean Fertility and Production** (Ruiz Diaz, Simon & Sullivan)	**Herbicide Symptomology** (Lancaster)
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1:10 PM	**Herbicide Symptomology** (Lancaster)	**Precision Ag** (Joshi)	**Cotton/Soybean Fertility and Production** (Ruiz Diaz, Simon & Sullivan)
2:00 PM	**Optimizing Glufosinate** (Lancaster)	**Soil Health** (Obour)	
2:50 PM	**Adjourn**		
	Friday 7/11/2023		
7:00 AM	Registration – **North Agronomy Farm**		
	Group A	**Group B**	**Group C**
7:30 AM	**Crop Insect Pests** (Whitworth)	**Weed ID** (Dille & Cott)	**Cotton/Soybean Growth & Development** (Simon & Sullivan)
8:20 AM	**Crop Diseases** (Onofre)		
9:10 AM	**Break**		
9:25 AM	**Weed ID** (Dille & Cott)	**Cotton/Soybean Growth & Development** (Simon & Sullivan)	**Crop Insect Pests** (Whitworth)
10:15 AM			**Crop Diseases** (Onofre)
11:05 AM	**Lunch – North Agronomy Farm**		
11:55 AM	**Cotton/Soybean Growth & Development** (Simon & Sullivan)	**Crop Insect Pests** (Whitworth)	**Weed ID** (Dille & Cott)
12:45 PM		**Crop Diseases** (Onofre)	
1:35 PM	**Break**		
1:50 PM	**Core Hour**		
2:40 PM	**Adjourn**		

8. Artificial Intelligence in Kansas Agriculture Conference on July 22

K-State Research and Extension and K-State's Institute for Digital Agriculture and Advanced Analytics (ID3A) are hosting the AI in Kansas Agriculture Conference, showcasing some of the newest agricultural technologies powered by artificial intelligence. The conference will feature panel discussions by K-State researchers, industry leaders, and producers on the latest AI and digital innovations in row crop and livestock production, along with live demonstrations of robotics and emerging technologies.

Date & Time: July 22, 2025 | 1:00 p.m. – 5:30 p.m.
Location: The Ranch House, 28784 US-75, Lyndon, KS 66451
Registration: Free, but limited to 200 attendees.
Registration link: https://kstate.qualtrics.com/jfe/form/SV_9H1PvyFaFrQFNZA

Agenda and Speakers

12:30-1:15 p.m.	**Registration**
1:15-1:30 p.m.	**Opening Remarks**
1:30-2:15 p.m.	Historical Account of Ag Technology in the Last 10 Years to Modern Robotics
2:15-3:00 p.m.	AI and Its Trustability
3:00-3:45 p.m.	Cost-Benefit Analysis of Precision Ag Tools: Are They Worth the Investment?
3:45-4:00 p.m.	**Break**
4:00-4:45 p.m.	Revolutionizing Livestock Farming with Virtual Fencing Using Advanced Technology
4:45-5:30 p.m.	Spray Drone in Pasture Management - Outside Session Demonstration
5:30-7:30 p.m.	**Networking Dinner and Live Demonstrations**

For more detailed information, please visit our website: https://www.k-state.edu/next-gen/key-initiatives/interdisciplinary-institutes/digital-ag-advanced-analytics/about/AiInAg.html

For any questions or additional information, please contact:

Rebecca Dale: rebeccad@ksu.edu

Deepak Joshi: drjoshi@ksu.edu

Cailin Wycoff: cailinr@ksu.edu

Ryan Schaub: reschaub@ksu.edu

Rod Schaub: rschaub@ksu.edu

9. Drones and satellites in agriculture - August 7 in Winfield

K-State Research and Extension invites producers and ag professionals to a special event on

Thursday, August 7, focused on the power of drones and satellite data in agriculture.

Held at the Tisdale Methodist Church (17507 US-160, Winfield, KS), this free event will run from 9:00 AM to 11:30 AM, with lunch provided courtesy of RCB Bank.

Presentations and live demos will include:

- **Pastureland biomass estimation using drones** – Dr. Deepak Joshi, K-State Precision Ag Specialist
- **Using Earth observation and satellite data in precision ag** – Dr. Jaymelynn Farney, K-State Beef Systems Specialist
- **Drone demonstrations –** Midwest Drone Applications

Registration is required by August 1. Register here: https://bit.ly/DroneCL or call 620-221-5450.

For more information, contact Jeff Seiler at jseiler4@ksu.edu

K·STATE
Research and Extension

DRONES & SATELLITES IN AGRICULTURE

Earth Observation and Satellite Data: their Role in Precision Agriculture

DR. DEEPAK JOSHI
Precision Agriculture Specialist
Kansas State University

Pastureland Biomass Estimation Using Drone

DR. JAYMELYNN FARNEY
Beef Systems Specialist
Kansas State University

Drone Demo
Midwest Drone Applications

THURSDAY, AUGUST 7TH
9:00 AM - 11:30 AM

TISDALE METHODIST CHURCH
17507 US-160
WINFIELD, KS 67156

Lunch Provided by:

RCB BANK
That's my bank!

Registration Required by August 1st
https://bit.ly/DroneCL
620-221-5450

Kansas State University is committed to making its services, activities and programs accessible to all participants. If you have special requirements due to a physical, vision, or hearing disability, contact Jeff Seiler, 316-660-0153, by July 10th. Kansas State University Agricultural Experiment Station and Cooperative Service. K-State Research and Extension is an equal opportunity provider and employer.