Issue 1012

K-STATE
Research and Extension

Extension Agronomy

eUpdate

07/18/2024

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. Estimating corn yield potential using the yield component method

With most corn fields in Kansas already in reproductive stages (or close to flowering for late-planted fields), it is time to start assessing grain yield potential. Successful pollination is a critical aspect that farmers can evaluate by examining ear silks. Having conditions that favor the synchrony between the pollen shed by the tassels and the silks, the exposed silks should turn brown and easily separate from the ear when the husks are removed.

Corn flowering

Water stress around flowering time (R1, http://www.bookstore.ksre.ksu.edu/pubs/MF3305.pdf) will negatively impact pollination due to a lack of synchrony between the pollen release and the emergence of the silks, which is a process that requires a lot of water. Heat stress around flowering will mainly impact the viability of the pollen. Usually, under dryland conditions in Kansas, water and heat stress happen together. Silks that have not been successfully pollinated will stay green, possibly growing several inches long (Figure 1). Unpollinated silks also will be connected securely to the ovaries (the undeveloped kernels) when the husks are removed.

Figure 1. Long silks primarily reflecting floral asynchrony. Silks that have not been successfully pollinated will stay green. Infographic by Ignacio Ciampitti, K-State Research and Extension.

Corn yield potential estimation

Once pollination is complete or near completion, farmers could begin to estimate corn yield potential. To obtain a reasonable estimate, corn should be at least in the milk stage (R3). Before the milk stage, since grain abortion is still possible under stress conditions (mainly due to drought and/or heat stresses), it is difficult to tell which kernels will develop and which ones will abort.

To estimate yields, we can use the *yield component method* (Figure 2). This approach uses a combination of known and projected yield components. It is considered "potential" yield because one of the critical yield components, kernel size, remains unknown until physiological maturity. Therefore, we can only make an estimate of predicted yield based on expected conditions during the grain filling period (e.g. favorable, average, or poor).

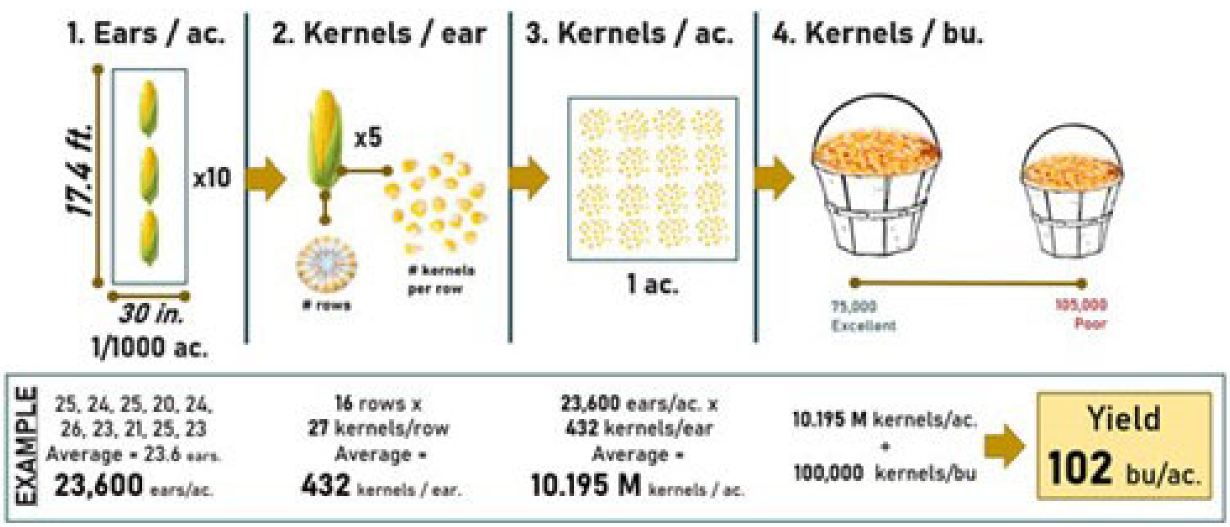

Figure 2. Example of corn yield estimation under the "yield components method."

Estimating corn yield using yield components uses the following elements:

Step 1. Ears per acre: This is determined by counting the number of ears in a known area. With 30-inch rows, 17.4 feet of row = 1,000th of an acre. This is probably the minimum area that should be used. The number of ears in 17.4 feet of row x 1,000 = the number of ears per acre. Counting a longer row length is fine; just be sure to convert it to the correct portion of an acre when determining the number of ears per acre. Make ear counts in 10 to 15 representative parts of the field or management zones to get a good average estimate. The more ear counts you make (assuming they accurately represent the field or zone of interest), the more confidence you have in the yield estimate.

Example (Figure 2, step 1):

- Counting 10 times 17.4-foot sections: (25 + 24 + 25 + 21 + 24 + 26 + 23 + 21 + 25 + 23)
- 236/10 = 23.6 ears. Scaling up to an acre: 23.6 x 1,000 = **23,600 ears per acre.**

Step 2. Kernels per ear: There are two sub-components of kernels per ear: (i) the number of rows per year and (ii) the number of kernels within each row. Most likely, the number of rows will be around 16, and ears always keep an even number of rows. The number of kernels per row depends on multiple factors, starting from the hybrid, but mainly on the growing conditions around flowering. To arrive at kernels per ear, multiply the two sub-components (number of rows x kernels per row). *Note: do not count aborted kernels or the kernels on the butt of the ear; count only kernels that are in complete rings around the ear. Do this for every 5th or 6th plant in each of your ear count areas. Avoid odd, non-representative ears.*

Example (Figure 2, step 2):

- Counting 5 ears from each 17.4-foot area had an average of 16 rows and 27 kernels per row: 16 x 27 = **432 kernels per ear**

Step 3. Kernels per acre = Ears per acre x kernels per ear

Example (Figure 2, step 3):

- 23,600 ears per acre x 432 kernels per ear = **10,195,000 kernels per acre**

Step 4. Kernels per bushel: This must be estimated until the plants reach physiological maturity. Common values range from 75,000 to 80,000 for excellent, 85,000 to 90,000 for average, and 95,000 to 105,000 for poor grain filling conditions. At this point, the best you can do is estimate a range of potential yields depending on expectations for the rest of the season.

Example: Under a scenario of temperatures above 100° F for the next 7-14 days and lack of rains (and if these conditions persist), it might be more than reasonable to assume below-average grain filling conditions producing overall medium to small kernels. Based on the projected weather, a reasonable value might be **100,000 kernels per bushel** (Figure 2, step 4).

Step 5. Bushels per acre:

- 10,195,000 kernels per acre ÷ 100,000 kernels per bushel ~ **102 bushels per acre**

Final considerations

If these estimates are close to correct, the field in this example is probably worth taking to grain harvest. Past experience indicates that this method of estimating yield usually provides somewhat optimistic estimates. Please consider these points when doing these field estimations.

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2. Wheat streak mosaic virus: control of volunteer wheat is crucial

During this past season, we have seen widespread wheat streak mosaic virus across the state. Because of this, abundant curl mites will be active in the state. Producers should be vigilant about volunteer management between now and planting. Recent moisture may lead to higher levels of volunteer wheat emergence in the coming weeks.

Volunteer wheat control is one of the most important preventative measures for wheat streak mosaic virus. If volunteer wheat is allowed to stand, it creates a "green bridge," allowing wheat streak mosaic and wheat curl mites to survive locally. Volunteer wheat should be terminated at least two weeks before planting to allow sufficient time for mites to die off. Growers should be mindful of volunteer wheat that may "hide" in double-cropped soybeans or cover crops and may be difficult to control.

Figure 1. Volunteer wheat that has emerged in wheat residue. Photo by Sarah Lancaster, K-State Research and Extension.

Breaking the "green bridge"

Wheat curl mites will move off growing wheat as the green tissue dries down and dies. After moving off the existing wheat at or near harvest time, the mites need to find green tissue of a suitable host soon, or they will die (death of the whole population will take approximately 2 weeks).

Producers often like to wait several weeks after harvest before making their first herbicide application to control volunteer wheat. This allows as much volunteer wheat as possible to emerge before spraying it or tilling it the first time. Glyphosate and atrazine are two herbicides that are often used for this purpose. Additional information about controlling volunteer wheat can be found in a recent eUpdate article: "Controlling weeds after wheat harvest." Often, a second application or tillage operation will be needed later in the summer to eliminate the green bridge to fall-planted wheat by ensuring all volunteer wheat is dead within ½ mile of wheat being planted in the fall. Wet weather through late summer often favors multiple flushes of volunteer wheat (Figure 2). Also, it favors the growth of other grassy weeds that can support moderate populations of the curl mites and virus.

Figure 2. A thick stand of volunteer wheat after wheat harvest (left panel) and detail of volunteer wheat development (right panel). Photos were taken in Edwards County, KS, by Romulo Lollato, K-State Research and Extension.

Management with genetic resistance: One tool in the toolbox

Other than timely control of volunteer wheat, genetic resistance is also an important tool for WSMV control. Genetic resistance to wheat streak mosaic can also reduce the risk of severe disease problems. There are currently several that have wheat streak mosaic resistance, including KS Mako (red), KS Bill Snyder (red), KS Dallas (red), KS Hamilton (red), Guardian (red), Oakley CL (red), Joe (white), and Clara CL (white). Some of these varieties have a gene named *wsm2*. This resistance gene helps but has limitations. For example, this gene is effective against wheat streak mosaic virus but not against Triticum mosaic virus (https://bookstore.ksre.ksu.edu/pubs/ep145.pdf) or wheat mosaic virus (high plains disease), two other viral diseases spread by wheat curl mites, sometimes simultaneously. The resistance conferred by *wsm2* is also temperature-sensitive. It is much less effective at high temperatures, although resistance in KS Dallas and KS Hamilton seem to endure greater temperatures before breaking down (~ 70º F). The resistance is much less effective if wheat is planted early for grazing or if high temperatures persist into October. KS Silverado (white) also has temperature-sensitive resistance to wheat streak mosaic, although from a different source than *wsm2*.

In addition, there are a handful of varieties with resistance to the wheat curl mite, including TAM 112, Byrd, Avery, Langin, Kivari AX, KS Western Star, Whistler, Canvas, Guardian, Crescent AX, Incline AX, Fortify SF, TAM 115, TAM 204, and T158. These varieties remain susceptible to viral diseases, but they generally slow the development of the mite populations in the fall. This resistance can help reduce the risk of severe disease. Still, it will not provide enough protection if wheat is planted close to volunteer wheat or other hosts infested with large populations of the curl mites and virus.

Unfortunately, many of these varieties are adapted to western Kansas and may not be the best options for production systems in the central corridor. Some central Kansas-adapted varieties, including Rockstar, SY Wolverine, LCS Photon AX, LCS Helix AX, and LCS Julep, tolerate WSMV infection better than others. KS Mako is a new release out of the K-State Manhattan breeding program that is adapted for the central corridor of the state and does carry the *wsm2* gene. These varieties will still show symptoms of WSMV but may yield better than other varieties that are more susceptible.

More information on variety selection can be found here: MF991 *Wheat Variety Disease and Insect Ratings* https://bookstore.ksre.ksu.edu/pubs/MF991.pdf

Figure 3. Close-up of wheat showing symptoms of a wheat streak mosaic virus infection in the fall. Photo by Kelsey Andersen Onofre, K-State Research and Extension.

Other hosts for the wheat curl mite

Volunteer wheat is not the only host of the wheat curl mite. Over the years, multiple research studies have evaluated the suitability of wild grasses as hosts for both the curl mite and the wheat streak virus. There is considerable range in the ability of a grassy weed species to host the mite and the virus. Barnyardgrass is among the more suitable hosts for both the virus and mites, but fortunately, it is not that common in wheat fields. In contrast, although relatively poor hosts, various foxtails could be important disease reservoirs simply because of their abundance. These grasses may play an important role in allowing the mites and the virus to survive during the summer months, particularly in the absence of volunteer wheat.

The K-State Research and Extension publication, MF3383 - *Wheat Streak Mosaic*, includes information about grassy weed hosts of the mite and the virus and the contribution of these hosts to the risk of severe wheat streak mosaic infections. Take note of significant stands of these grasses in marginal areas and control them as you would volunteer wheat.

If volunteer wheat and other hosts are not controlled throughout the summer and become infested with wheat curl mites, the mites will survive until fall and could infest newly planted wheat. Wheat curl mite infestations of wheat often lead to wheat streak mosaic infections (Figures 2 and 3).

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3. 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 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[1].

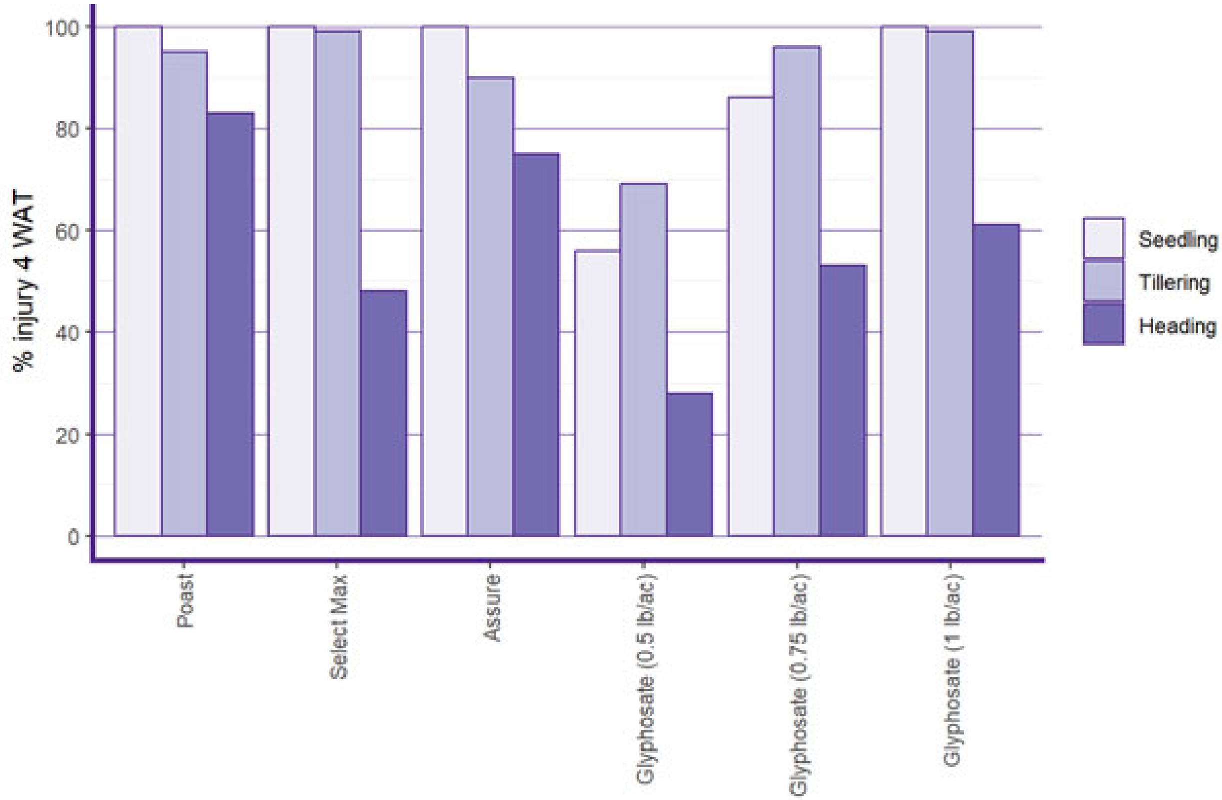

Figure 2. Tumble windmill injury 4 weeks after applications of glyphosate, Poast, Select Max, and Assure to seedling (2- to 4-inch tall), tillering (5 to 10 tillers per plant), and heading (when the first seed head is emerging) stages[1].

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].

A more recent study, conducted over two years, showed that all tested postemergence herbicide programs applied to 10- to 12-inch tall tumble windmillgrass plants at the heading stage in fallow fields were ineffective and provided less than 68% control, except glyphosate which provided 85% control 28 days after application. In an ongoing on-farm trial (data not yet published), two applications of clethodim provided the best control of tumble windmillgrass in both no-till and minimum-tilled plots. However, tillage with a sweep plow provided enhanced control over no-till.

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 controlled burning can be an effective control strategy, with the greatest control from summer or fall burns.

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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4. Grasshopper populations in Kansas remain elevated

Weather patterns can have a significant impact on grasshopper populations year to year. Hot, dry summers increase the survival of nymphs and adult grasshoppers, leading to increased egg production during the growing season. Cool, wet weather promotes fungal pathogens that can reduce egg and nymph survival, but if the following spring is warm and wet, egg hatching will increase, and more nymphs survive. So, several years of hot, dry summers followed by warm, wet springs can eventually lead to large populations of grasshoppers in some regions.

Weather patterns, along with abundant grassy and broad-leaf weeds, have supported the presence of large grasshopper populations in western and central Kansas this year (Figure 1). Most crops are likely mature enough to withstand some defoliation as summer continues. However, 5 to 8 grasshoppers per square yard in corn or sorghum fields may warrant treatment.

Figure 1. Grasshopper infestation in corn. Photo by C. Nisly.

Fall-planted crops: Alfalfa and wheat

Later this season, fall-planted crops could be at risk, especially as alternate food sources are controlled or go dormant. In areas with larger grasshopper populations, seedling alfalfa and wheat could be at risk.

Before planting alfalfa, treatment should be considered if there are 15 or more grasshoppers per square yard around the planting area. Once planted and growing, consider treatment if 3-5 grasshoppers per square yard are found in the seedling alfalfa stand.

Vegetated borders around areas where wheat will be planted should be scouted 10 days before planting. Consider treating those borders if there are 7 to 12 grasshoppers per square yard. Once growing, 3 or more grasshoppers per square yard within the field can destroy seedling wheat stands. If grasshopper populations are low to moderate, seed treatments can protect emerging wheat plants for several weeks if products are applied at the highest registered rate. Seed treatments will be less effective under severe grasshopper pressure. Avoid planting too early, as this will help reduce the time that wheat will need to be protected.

In either crop, multiple applications might be necessary depending on the products used and the severity of the season's grasshopper buildup. Please refer to the most recent Insect Management Guides for specific control information.

Corn Insect Management Guide:
https://bookstore.ksre.ksu.edu/download/corn-insect-pest-management-2024_MF810

Sorghum Insect Management Guide: https://bookstore.ksre.ksu.edu/pubs/sorghum-insect-pest-management-2024_MF742.pdf

Alfalfa Insect Management Guide: https://bookstore.ksre.ksu.edu/pubs/alfalfa-insect-pest-management-2024_MF809.PDF

Wheat Insect Management Guide: https://bookstore.ksre.ksu.edu/pubs/wheat-insect-pest-management-2024_MF745.pdf

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5. Two new Area Agronomists join K-State Research and Extension

Dr. Logan Simon – Southwest Area Agronomist

Logan Simon joined the Western Kansas Research-Extension Centers in April 2024 as the Southwest Area Agronomist based in Garden City, KS. He grew up on a diversified crop and livestock farming operation in the rolling hills above the Mississippi River Valley in western Illinois, where he developed a passion for agriculture through his work on the family farm and involvement in Illinois FFA (2014 American Degree Recipient).

Simon received his B.S. in Plant Science (2017) from the University of Missouri and his M.S. (2021) and Ph.D. (2024) in Agronomy from Kansas State University. His graduate research focused on determining best management strategies for cover crops in the traditional dryland wheat-based cropping systems of western Kansas and the semi-arid central Great Plains through a combination of small-plot and on-farm experiments across the region.

In his extension role, Dr. Simon serves 26 counties in southwest and south-central Kansas. His applied research program focuses on dryland and limit-irrigated cropping systems to increase regional productivity, water use efficiency, economic vitality, and environmental sustainability. He can be reached by email at lsimon@ksu.edu.

Dr. Tina Sullivan – Northeast Area Agronomist

Tina Sullivan joined the Northeast Research and Extension Center in June 2024 as the Northeast Area Agronomist based in Manhattan, KS. Originally from southeast Tennessee, Sullivan was raised on a goat farm started by her late father and her mother in Bledsoe County. Surrounded by vegetable farms and smaller-scale row cropping and forage, agronomy had always been part of her life, even if it was not an initial interest of her youth. FFA during high school allowed her to branch out into topic areas and initial research endeavors through the Agriscience Fair and other career development events.

Sullivan graduated with her bachelor's degree in agriculture – agricultural engineering technology and precision agriculture from the University of Tennessee at Martin in 2018. Working as a manager trainee for the Tennessee Farmers Cooperative stationed at the local branch of her home county led her down a path of wanting to go to graduate school for the intersections of agronomy and irrigation. This desire led her to Utah State University, where she did her master's and PhD with Dr.

Matt Yost. Her graduate work focused on irrigation and cropping system management interactions in common and alternative forage systems. Additionally, Sullivan led some of Utah's first outdoor industrial hemp trials since the 1940s.

Responsibilities of this position include extension and outreach as well as applied research for the northeastern region of Kansas. This area comprises 31 counties, including the River Valley, Meadowlark, Flint Hills, and Central districts. Additional counties include Atchison, Brown, Dickinson, Doniphan, Douglas, Geary, Harvey, Johnson, Leavenworth, Lyon, Marion, Marshall, McPherson, Pottawatomie, Reno, Rice, Riley, Shawnee, Wabaunsee, and Wyandotte.

Outside of work, Sullivan enjoys hiking with her dog, Dottie, and baking bread and cookies. She can be reached by email at tsullivan@ksu.edu.

6. K-State survey of cotton grower perspectives

In 2020, southern Kansas farmers planted 195,000 acres of cotton, which produced 300,000 480-lb bales of cotton lint and 99,000 tons of cottonseed, with a combined economic value of $97,164,000! Cotton has established a place in Kansas, and K-State Research & Extension wants to hear from our cotton growers to better understand the current status of cotton production and emerging challenges in cotton production in Kansas.

This Qualtrics survey of Kansas Cotton Grower Perspectives was developed under the leadership of Dr. Logan Simon, Southwest Area Agronomist, in collaboration with the K-State Extension Cotton Working Group. The survey should take less than 10 minutes to complete and includes questions regarding 1) rotations and tillage, 2) variety selection, 3) planting methods, 4) irrigation strategies, 5) soil fertility, 6) plant growth regulators, 7) weed management, 8) insect management, 9) disease management, and 10) harvest and harvest aids.

The value of survey participation

Responses will help guide cotton research & extension programming at Kansas State University to meet the priorities and concerns of cotton producers. Survey results will potentially be used as justification when seeking funding for research and extension programming for cotton in Kansas. Responses may be shared within the K-State Extension Cotton Working Group and used for quantitative and qualitative analysis to develop extension bulletins, presentations, and scientific journal articles.

Respondents will have the option to provide their contact information (email address and phone number) for potential follow-up phone conversations and field visits. However, identities will be kept confidential outside the K-State Extension Cotton Working Group. Participant information, even if identities are removed, will not be used or distributed for future research studies.

The survey can be accessed by scanning the QR code below or at
https://kstate.qualtrics.com/jfe/form/SV_3drJeSXR94YPPpA

For questions about the survey, please contact Logan Simon at (620)276-8286 or lsimon@ksu.edu.

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7. Two regional winter canola meetings scheduled for Kansas and Oklahoma in early August

Kansas State University, Oklahoma State University, and the Great Plains Canola Association will host two regional winter canola meetings on August 6 and 7.

The meetings are an opportunity to learn about variety performance from the past year and future varieties. Production topics such as pre-season and in-season nitrogen management, winter survival, and harvest options will be presented. Questions related to marketing will be addressed, and attendees will be able to hear from an experienced grower panel.

August 6 – Harper, KS
Westview Lodge
1110 W. 14th
5:30 p.m.

August 7 – Enid, OK
Hoover Building
300 E. Oxford Ave
10:00 a.m.

The Great Plains Canola Association and industry partners will sponsor a meal.

To RSVP for the Harper meeting, please contact the Harper County Extension Office at 620-842-5445 or email Jenni Carr at jlcarr@k-state.edu.

To RSVP for the Enid meeting, please contact Ron Sholar at 405-780-0113 or jrsholar@aol.com, or

Josh Bushong at 405-361-6941 or josh.bushong@okstate.edu.

More information also is available from Mike Stamm at 785-532-3871, or mjstamm@ksu.edu.

8. Kansas River Valley Experiment Field Fall Field Day, August 13

All interested individuals are invited to attend the **2024 Kansas River Valley Experiment Field Day** on **Tuesday, August 13, at 5:00 p.m**. The event will be held at the Rossville Experiment Field (1 mile east of Rossville on Hwy 24, south side of the road).

This is a free event, and pre-registration is requested for the catered BBQ meal. To register, please call Kaci Beck at the Shawnee County Extension office at 785-232-0062 ext. 100 by 5:00 p.m. on Monday, August 12. Commercial pesticide applicator and CCA credits have been applied for.

Topics and speakers:

Considerations for the use of enhanced efficiency plant nutrition products – Dorivar Ruiz Diaz

Optimizing phosphorus: Maximizing gains and minimizing losses – Megan Bourns

Management zones for precision agriculture – Gaurav Jha

Updates on SDS management, including cropping systems, fertility, and seed treatments – Rodrigo Onofre

Kansas State Research & Extension
KSU Agronomy

Kansas River Valley Experiment Field
2024 Fall Field Day

Tuesday, August 13 - 5:00 p.m. Sharp!

Rossville Field — 1 Mile East of Rossville
On U.S. Highway 24 on the South Side of the Road

Considerations for the use of enhanced efficiency plant nutrition products
Dr. Dorivar Ruiz Diaz

Optimizing P: Maximizing gains and minimizing losses
Megan Bourns

Management zones for precision farming
Dr. Gaurav Jha

Updates on SDS Management including cropping systems, fertility and seed treatments
Dr. Rodrigo Onofre

To pre-register for this event and for the catered meal, call Kaci Beck at the Shawnee County Extension Office at 785-232-0062 ext 100, by 5:00 p.m. on Monday, August 12.

CCA Credits have been applied for.

9. East Central Experiment Field Fall Field Day, August 21

All interested individuals are invited to attend the **2024 East Central Experiment Field Day** on **Wednesday, August 21, at 9:00 a.m**. The event will be held at the Ottawa Experiment Field (From I-35 at Ottawa, proceed south 1.7 miles on 59 Hwy, go east 1 mile, and south 0.75 miles).

This is a free event, and no pre-registration is required. Registration will begin at 9 a.m., with coffee and doughnuts provided. The program will start at 9:30 a.m. There will be lunch at noon after the conclusion of the program. Commercial pesticide applicator and CCA credits have been applied for.

Topics and speakers:

Considerations for the use of enhanced efficiency plant nutrition products – Dorivar Ruiz Diaz

Optimizing phosphorus: Maximizing gains and minimizing losses – Megan Bourns

Management zones for precision agriculture – Gaurav Jha

Please contact the East-Central Research Station at 785-242-5616 at least two days prior to this event if accommodations are needed for persons with disabilities or special requirements.

Kansas State Research & Extension

KSU Agronomy Ottawa Field Day

Wednesday, August 21th, 2024

East-Central Experiment Field

Ottawa, KS

From I-35 at Ottawa: South 1.7 miles on 59 Hwy, East 1.0 mile, South 0.75 mile

9:00 ....Registration, coffee, and doughnuts

9:30 ....Program begins

Considerations for the use of enhanced efficiency plant nutrition products
Dr. Dorivar Ruiz Diaz

Optimizing P: Maximizing gains and minimizing losses
Megan Bourns

Management zones for precision farming
Dr. Gaurav Jha

12:00 ....Lunch

CCA Credits have applied for. Please contact the East-Central Research Station at 785-242-5616 at least two days prior to this event if accommodations are needed for persons with disabilities or special requirements.

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