Issue 890

K-STATE Research and Extension

Extension Agronomy

eUpdate

01/27/2022

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.

Subscribe to the eUpdate mailing list: https://listserv.ksu.edu/cgi-bin?SUBED1=EUPDATE&A=1

eUpdate Table of Contents | 01/27/2022 | Issue 890

1. Paraquat: What you need to know for use in 2022

Paraquat is a restricted use herbicide that was first commercialized in the 1960s and it is found in herbicides such Gramoxone, Helmquat, and Parazone. It is a non-selective, contact herbicide and desiccant that belongs in group 22 site of action(photosystem I electron diverter). Paraquat is one of the most widely applied herbicides in the United States where it is heavily used in corn, cotton, and soybeans and some specialty crops like grapes, peanuts, and pistachios for weed management and crop desiccation. Paraquat has a low oral LD_{50} and the signal word "Danger" is used on product labels to signify this risk.

The 15-year EPA herbicide registration review for paraquat began in December 2011. In 2016, there were several new safety measures implemented in order to mitigate the of human illness and injury caused by accidental paraquat toxicity. These include:

- Label changes to emphasize toxicity
- Paraquat can only be applied and handled by certified applicators
- **Required all handlers to have a paraquat-specific training, found at** https://npsec.us/paraquat
- Closed system packaging for non-bulk end use containers (< 120 gallons)

In August of 2021, the EPA released the final Interim Decision (ID) for paraquat. These EPA determined that these additional label parameters are necessary to mitigate the risk of human illness and injury. The parameters are as follows:

- Increased label clarity (already included on label for Gramoxone SL 3.0)
    - **The maximum number of applications, maximum annual rates, maximum single application rate, minimum retreatment interval, Pre-Harvest Interval (PHI) can be found in Tables 1, 2, and 3**.

- Limited aerial applications
    - Permitted for all labeled crops and is restricted **to 350 acres/24 hours/individual applicator**, but there is no acreage limit when sprayed as cotton desiccate
- Required residential buffers
    - Rate dependent
        - **50-foot buffer when applying < 1.6 pints/acre**
        - **75-foot buffer when applying > 1.6 pints/acre**
    - Existing label restricts the use of paraquat in residential or public areas or if there is a high likelihood of drift onto sensitive areas
- Prohibited pressurized handgun and backpack sprayer applications
    - Manually pressurized hand wands are permitted
- Required enclosed cabs or respirators for ground boom applications
    - If applying, **>80 acres/24 hours an enclosed cab is required**
    - If applying, **< 80 acres/24 hours an enclosed cab is preferred, but a N95 respirator is the minimum requirement**
- Increased the Restricted Entry Interval (REI) for several labeled crops
    - The REI is **48 hours** for all labeled crops, except when paraquat us used as a harvest aid in cotton, when the REI is **7 days**

- Transport requirements
    - Truck drivers who are not certified applicators **must have no contact with or access to paraquat**, but they may transport previously opened containers of paraquat if specific requirements are met
        - Containers must be securely closed to prevent accidental release of paraquat
        - All openings on portable containers must have a tamper-evident device applied by a certified applicator, a one-way valve, or both for portable/refillable containers
    - If containers are not permanently attached to the motor vehicle they must be secured to prevent shifting and motion between packages
    - **Truck drivers who are not certified applicators must not transfer or have any access to paraquat or any formulation containing paraquat**
    - Full and emptied portable containers must be transferred to a certified applicator, a secured and locked storage facility that is controlled by a certified applicator, or a licensed disposal facility
    - **Certified applicators are required to ensure that truck drivers understand the risks associated with paraquat and the consequences of misuse**

Table 1. The maximum number of applications, annual rates, and single rate application, the minimum retreatment interval, and Pre-Harvest Interval (PHI) for paraquat use in alfalfa, fallow, and wheat (Sourced from the Gramoxone SL 3.0 label).

Crop	Application Timing	Max # of application/yr	Maximum annual rates	Maximum single application rate	Minimum retreatment interval	Pre-Harvest Interval
Alfalfa	PRE, PP, Broadcast, or Banded over row in no-till or conventional planting	2	2.7 pts/ac (do not exceed 1.0 lbs ai/ac/year for all paraquat containing products)	2.7 pts/ac	7 days	Harvest at normal maturity
	New seedling (do not use on alfalfa grown for seed)	1	1.3 pt/ac (do not exceed 1.0 lbs ai/ac/year for all paraquat containing products)	1.3 pts/ac	NA	70 days
	Between cuttings in established stand	3	2 pts/ac (do not exceed 0.75 lbs ai in between cuttings applications; do not exceed	0.7 pts/ac	1 application/ cutting interval	30 days for cutting, harvesting, and grazing

			1.0 lbs ai/ac/year for all paraquat containing products)			
	Dormant	1	2 pts/ac (do not exceed 0.75 lbs ai for dormant applications; do not exceed 1.0 lbs ai/ac/year for all paraquat containing products)	2.0 pts/ac	NA	42 days in KS, NE, MO, CO for established stands and 60 days in OK for established stands and newly established stands in KS, NE, MO, CO, and OK
Fallow		2	5.4 pts/ac (do not exceed 2.0 lbs ai/ac/year for chemical fallow applications)	2.7 pts/ac	7 days	NA
Wheat	PRE and PP	3	8.0 pts/ac (do not exceed 3.0 lbs ai/ac/year for PRE and PP applications)	2.7 pts/ac	7 days	Harvest grain, straw, forage, and hay at normal maturity

Table 2. The maximum number of applications, annual rates, and single rate application, the minimum retreatment interval, and Pre-Harvest Interval (PHI) for paraquat use in corn, soybeans, and sorghum (Sourced from the Gramoxone SL 3.0 label).

Crop	Application Timing	Max # of application/yr	Maximum annual rates	Maximum single application rate	Minimum retreatment interval	Pre-Harvest Interval
Corn	PRE and PP	3	8.0 pts/ac (do not exceed 3.0 lbs ai/ac/year for PRE and PP applications; do not exceed	2.7 pts/ac	7 days	Harvest at normal maturity

			5.0 lbs ai/ac/year for all paraquat containing products)			
	POST directed	3	4.0 pts/ac (do not exceed 1.5 lbs ai/ac/year for POST directed applications; do not exceed 5.0 lbs ai/ac/year for all paraquat containing products)	1.3 pts/ac	7 days	Harvest at normal maturity
	Harvest aid	1	1.3 pts/ac (do not exceed 0.5 lbs ai/ac/year for Harvest aid applications; do not exceed 5.0 lbs ai/ac/year for all paraquat containing products)	1.3 pts/ac	NA	7 days for grain and stover
Soybeans	PRE and PP	3	4.0 pts/ac (do not exceed 1.5 lbs ai/ac/year for PRE and PP applications; do not exceed 2.9 lbs ai/ac/year for all paraquat containing products)	2.7 pts/ac	7 days	Forage/hay: Not before R3 Seed: Harvest at normal maturity
	POST directed	2	1.3 pts/ac (do not exceed 1.0 lbs ai/ac/year for POST applications; do not exceed 2.75 lbs	1.3 pts/ac	14 days	Forage/hay: 46 days

			ai/ac/year for all paraquat containing products)			
	Harvest aid	1	0.7 pts/ac (do not exceed 0.25 lbs ai/ac/year for harvest aid applications; do not exceed 2.75 lbs ai/ac/year for all paraquat containing products)	10.7 fl/oz	14 days	Grain only: 15 days Soybeans grown for research, field trials, and seed production only: 3 days
Sorghum	PRE and PP	3	8.0 pts/ac (do not exceed 3.0 lbs ai/ac/year for PRE and PP applications; do not exceed 4.0 lbs ai/ac/year for all paraquat containing products)	2.7 pts/ac	7 days	Forage: 20 da ys Grain: 48 days
	POST directed	2	2.7 pts/ac (do not exceed 1.0 lbs ai/ac/year for POST applications; do not exceed 4.0 lbs ai/ac/year for all paraquat containing products)	2.7 pts/ac	7 days	Forage: 20 da ys Grain: 48 days

Table 3. The maximum number of applications, annual rates, and single rate application, the minimum retreatment interval, and Pre-Harvest Interval (PHI) for paraquat use in cotton and sunflower (Sourced from the Gramoxone SL 3.0 label).

Crop	Application Timing	Max # of application/year	Maximum annual rates	Maximum single application rate	Minimum retreatment interval	Pre-Harvest Interval
Cotton	PRE and PP	3	8.0 pts/ac (do not exceed 3.0 lbs ai/ac/year for PRE and PP applications; do not exceed 3.0 lbs ai/ac/year for all paraquat containing products)	2.7 pts/ac	7 days	Harvest at normal maturity
	POST directed	3	4.0 pts/ac (do not exceed 1.5 lbs ai/ac/year for POST directed applications; do not exceed 3.0 lbs ai/ac/year for all paraquat containing products)	1.3 pts/ac	14 days	Harvest at normal maturity
	Harvest aid	4	1.3 pts/ac (do not exceed 0.5 lbs ai/ac/year for Harvest aid applications; do not exceed 3.0 lbs ai/ac/year for all paraquat containing products)	1.3 pts/ac	7 days	7 days for western cotton and 3 days for all other cotton
Sunflower	PRE and PP	3	8.0 pts/ac (do not exceed 3.0 lbs ai/ac/year for all paraquat containing products)	2.7 pts/ac	7 days	Harvest at normal maturity
	Desiccation	2	1.3 pts/ac (do not exceed	1.3 pts/ac	7 days	7 days

			1.0 lbs ai/ac/year for paraquat-containing desiccation products; do not exceed 3.0 lbs ai/ac/year for all paraquat containing products)			

Although the ID is finalized, the paraquat herbicide registration is not complete and will not be completed unto the environmental risk assessment completed. The final ID can be found at https://www.regulations.gov/document/EPA-HQ-OPP-2011-0855-0307.

Links to the aforementioned paraquat products can be found below:

Gramoxone SL 3.0 label – https://www.syngenta-us.com/herbicides/gramoxone-sl-3.0

Parazone 3 SL – https://www.amvac.com/products/parazone-3-sl

Helmquat label – https://us.helmcrop.com/crop-protection/herbicides/helmquat-3sl

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.

Tyler Meyeres, Weed Science Graduate Student
tpmeyeres@ksu.edu

Sarah Lancaster, Weed Management Specialist
slancaster@ksu.edu

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

2. Dicamba training options in 2022

Anyone spraying XtendiMax, Engenia, or Tavium is required to have training **each year** prior to using these products. These products are restricted use pesticides and can only be applied by certified applicators. All three registrants will have training opportunities available. You may take training from any of the registrants, regardless of the product you are using. Websites and training formats are listed below.

BASF (webinars, self-paced, and face to face)
engeniaherbicide.com/training.html

Bayer (self-paced and face-to-face)
https://www.roundupreadyxtend.com/stewardship/Pages/default.aspx

Syngenta (self-paced)
https://www.syngenta-us.com/herbicides/tavium-application-stewardship

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

Sarah Lancaster, Weed Management Specialist
slancaster@ksu.edu

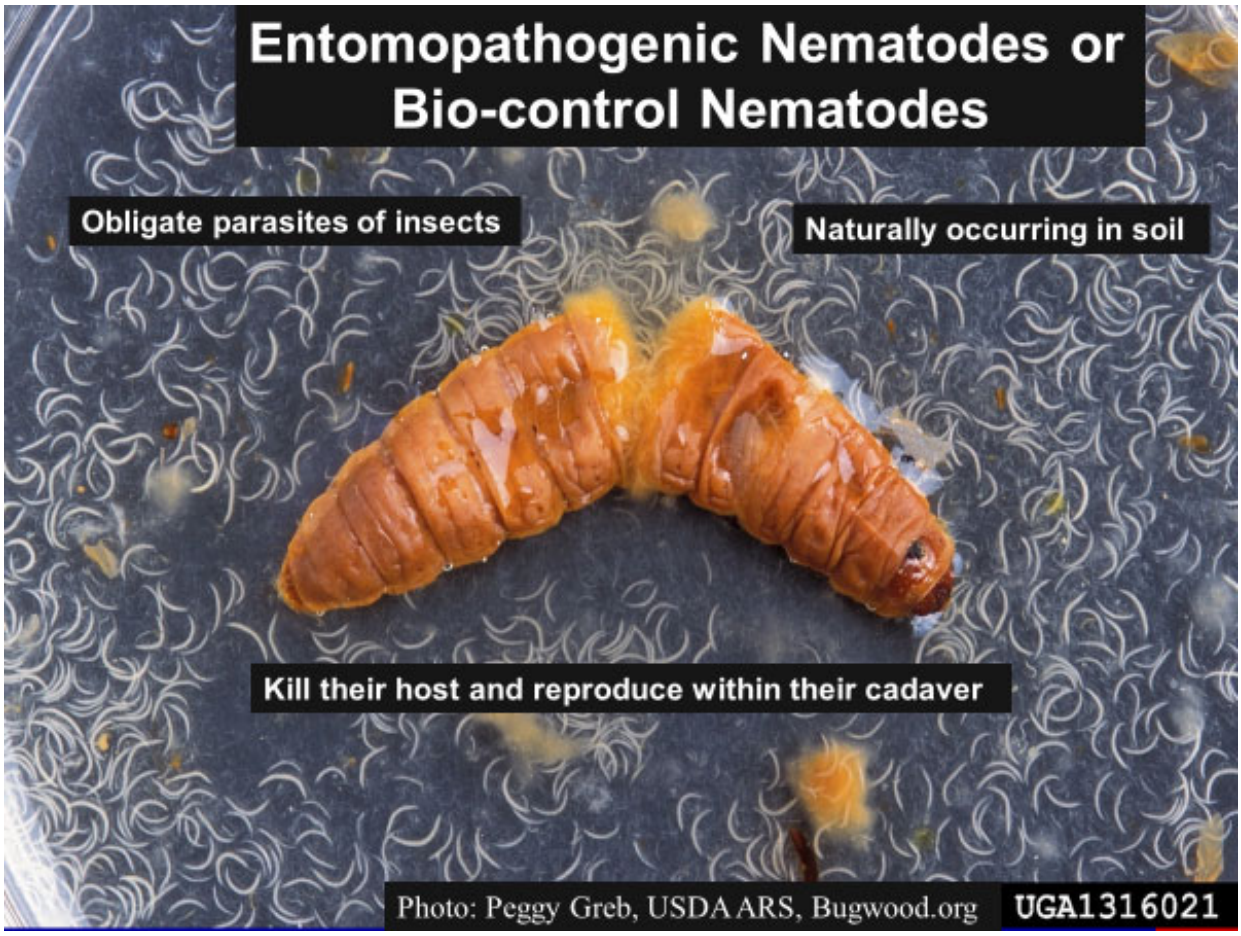
3. Free webinar on a new method for control of corn rootworm - Feb. 23

K-State Research and Extension will host a one-hour webinar starting at 9:30 a.m. on February 23, 2020, highlighting nematodes that kill corn rootworm larvae but are safe for plants.

Cornell University entomologist Elson Shields, responsible for the development of these persistent biocontrol nematode strains, will be the webinar's guest speaker. Shields and other collaborators have been conducting field studies in several states to examine the nematodes' efficacy and persistence over multiple seasons.

As corn rootworm control issues continue throughout the corn-growing regions of the United States, these nematodes are proving to be an effective way to reduce root damage and have the potential to slow the development of resistance in rootworm populations and prolong the efficacy of other control methods. These biocontrol nematodes can be used in tandem with several other rootworm control methods and can provide some root protection on their own. Shields will explain how these nematodes work, how they are incorporated into the field and present data from recent field trials.

Those planning to attend should preregister here: (https://ksu.zoom.us/meeting/register/tJIqdOqprzgoGNey6EybIZdE0_rfBp8ga6_h). You will receive a link to the meeting.



For more information, please contact:

Anthony Zukoff
Extension Associate - Entomology
K-State Southwest Research and Extension Center
Garden City, KS
620 275 9164
azukoff@k-state.edu

4. Kansas Ag-Climate Update for December 2021

The Kansas Ag-Climate Update is a joint effort between our climate and extension specialists. Every month the update includes a brief summary of that month, agronomic impacts, relevant maps and graphs, 1-month temperature and precipitation outlooks, monthly extremes, and notable highlights.

December 2021: Warmest 1-, 2-, 3-, 4-, and 5-month in the instrumental observation history

At the end of calendar year, not only was December 2021 the warmest month in instrumental history but also the past two-month, three-month, four-month, and five-month (i.e. August to December) were the warmest seasons during the past 127 years. Globally, this December is the 5th warmest month based on the past 127-year records.

Precipitation was slightly drier on average across the state. The normal state precipitation was 1.12" and each region from eastern to western regions was less than one inch short in December. From the National Climate Prediction Center, there are now obvious persistent or developing drought in the nine crop reporting districts in Kansas from January to March 2022.

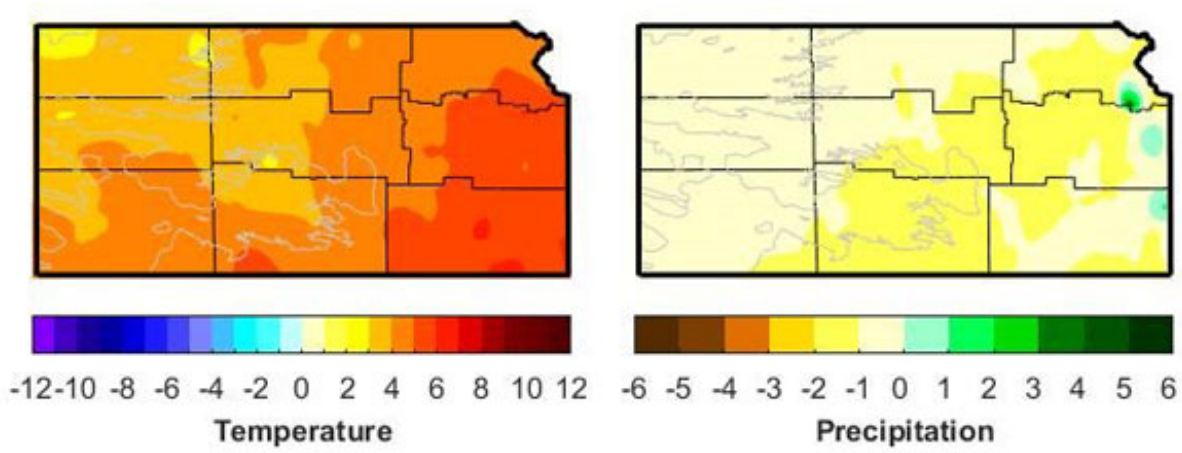


Figure 1. Departures from normal temperature (°F) and precipitation (inches) for December 2021.

View the entire December Ag-Climate Update, including the accompanying maps and graphics (not shown in this short summary), at http://climate.k-state.edu/ag/updates/.

5. K-State CropTalk webinar series returns in 2022

In 2021, a new series of hour-long webinars was launched with great success. For 2022, the K-State CropTalk webinar series is back and will be focused on agronomic topics targeted for northwest and north central Kansas. Topics range from soil fertility, weed management, cover crops, and weather resources. Continuing education credits have been applied for and will vary based on the subject area of each webinar.

Each webinar will begin at 12:00 pm (CST) and last until 1:00 pm, beginning with the first one on Monday, January 31.

Upon registration, participants will receive an email with instructions to attend via Zoom or YouTube. These webinars are open to all and there is no cost. Visit the K-State Northwest Research and Extension Center's website to register: https://www.northwest.k-state.edu/events/.

Please contact any local KSRE extension office in north central or northwest Kansas for any questions.

A complete list of webinars, with dates, topics, and speakers is detailed below.

January 31 – **Rolling with the Punches: 2022 Weed Control**
Sarah Lancaster, K-State Weed Scientist

February 7 – **Manure and your Soil Fertility Program**
Peter Tomlinson, K-State Environmental Quality Specialist

February 14 - **High Fertilizer Prices: The Perfect Time for Precision Ag**
Lucas Haag, K-State NW Region Agronomist

February 21 – **Managing Soil Fertility During Record High Fertilizer Prices**
Dorivar Ruiz Diaz, K-State Soil Fertility Specialist

February 28 – **Growing Nitrogen with Cover Crops**
DeAnn Presley, Soil Management Specialist

March 7 – **Climate Update and Kansas Mesonet**
Chip Redmond, K-State Assistant Climatologist and Kansas Mesonet Coordinator

K-State CropTalk Webinar Series

focused on Crop Production for Northwest and North Central Kansas

Join us Mondays from 12:00-1:00 p.m. CST

January 31
Rolling with the Punches: 2022 Weed Control
Dr. Sarah Lancaster, K-State Weed Science Specialist

February 7
Manure and Your Soil Fertility Program
Dr. Peter Tomlinson, K-State Environmental Quality Specialist

February 14
High Fertilizer Prices: The Perfect Time for Precision Ag
Dr. Lucas Haag, K-State NW Region Agronomist

February 21
Managing Soil Fertility During Record High Fertilizer Prices
Dr. Dorivar Ruiz, K-State Soil Fertility Specialist

February 28
Growing Nitrogen with Cover Crops
Dr. DeAnn Presley, K-State Environmental Soil Science and Management Specialist

March 7
Climate Update and Kansas Mesonet
Chip Redmond, K-State Assistant Climatologist and Kansas Mesonet Coordinator

For each session, 1 CCA credit has been applied for

Free to attend.
Register online or contact your local office:
www.northwest.ksu.edu/events

After registering, you will get a link to join via Zoom or YouTube

K-STATE
Research and Extension

For questions or more information please contact Sandra L. Wick, KSU Post Rock Extension District at 785-282-6823 or swick@ksu.edu.

6. Kansas Wheat Rx Schools to be held in Wichita and Hays in early February

Wheat Rx seminars are scheduled for February 8 in Wichita and on February 9 in Hays. Wheat Rx is partnership between Kansas Wheat and K-State Research and Extension to disseminate the latest research recommendations for high-yielding and high-quality wheat to Kansas wheat farmers.

These two Wheat Rx schools will have speakers that will discuss the most up-to-date wheat research information on how to manage your wheat crop not only for yield but also for quality and sustainability.

Registration for the event is $100 for non-members of the Kansas Association of Wheat Growers. However, members (including new members) will receive one free registration. Lunch and meeting materials are included with the registration fee.

Register online at https://kswheat.com/wheat-rx-registration-page

February 8, 2020 – Wichita, KS

- Location: DoubleTree by Hilton
  2098 Airport Road
- 9:00 am to 3:00 pm

February 9, 2020 – Hays, KS

- Location: Memorial Union Ballroom
  Ft. Hays State University
  700 College Drive

Agenda

8:00 – 9:00 am	Registration
9:00 am	Welcome and Introduction to Wheat Rx *Aaron Harries, Kansas Wheat*
9:15 am	Capturing Value for High-Quality Wheat *E.G. Herl, Grain Craft*

10:05 am	Break
10:20 am	Proper Fertility to Maximize Yield and Quality
11:10 am	Fungicides and Wheat Health *Kelsey Andersen Onofre, K-State*
Noon	Lunch
1:00 pm	Intensive Wheat Management *Romulo Lollato, K-State*
1:50 pm	Beyond Grain: Value of Wheat in the Production Chain *Aaron Harries*
2:40 pm	Question and Answer Panel
3:00 pm	Adjourn

Romulo Lollato, Wheat and Forages Specialist
lollato@ksu.edu

KANSAS WHEAT® Rx Seminars

FEBRUARY 8, 2022

Wichita

DoubleTree by Hilton
2098 Airport Road

FEBRUARY 9, 2022

Hays

Memorial Union Ballroom
Ft. Hays State University
700 College Drive

9 a.m. - 3 p.m.

A prescription for economical and sustainable production of high-quality wheat in Kansas

CCA CEUs available

Register at www.kswheat.com/wheatrx

Cost is $110 per attendee.
Lunch and meeting materials included.

Kansas Association of Wheat Growers members attend for free.

K-STATE
Research and Extension

Seminar agenda on page 2.

Kansas State University Department of Agronomy
2004 Throckmorton Plant Sciences Center | Manhattan, KS 66506
www.agronomy.ksu.edu | www.facebook.com/KState.Agron | www.twitter.com/KStateAgron

7. Kansas Corn Schools - Virtual program on February 3

The popular Kansas Corn School series is well underway in 2022. K-State Research and Extension is partnering with Kansas Corn to offer the winter learning sessions for Kansas corn farmers.

The schools will cover a number of issues facing corn producers and are tailored to each region. Topics include weed control, insect resistance, fertility management, disease management and late-planting seasons, economics, and farm policy. Morning refreshments and a hot lunch are provided at the in-person schools.

There is one remaining in-person school scheduled for February 24 in Hiawatha. It will begin at 8:30 am with registration and the program will end around 1:00 pm.

For those that were unable to attend an in-person Corn School, a virtual school will take place on Zoom from 6:00 to 8:00 pm on February 3.

2022 Kansas Corn Schools

- **February 3 – Virtual**
  Online only via Zoom

- **February 24 – Hiawatha**
  Fisher Center

Registration for your school of choice is available online at https://kscorn.com/cornschool/

Ignacio Ciampitti, Farming Systems
ciampitti@ksu.edu

Deb Ohlde, Director of Grower Services
dohlde@ksgrains.com