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. Review of herbicide label requirements: Paraquat

This article is the second in a series reviewing unique or updated label requirements for key herbicides. Instructions printed on your herbicide label supersede this information.

Paraquat is the active ingredient in the herbicide Gramaxone SL 2.0 and others. It kills plants by destroying the membranes around the cells. The same processes occur in human cells. The lungs are especially sensitive, but the chemical characteristics of paraquat make inhalation unlikely. The greatest risk is accidental swallowing. The oral LD50 (lethal dose for 50% of the population) for humans is 3-5 mg/kg, which is roughly equal to 0.4 fluid ounces (1/200th cup) of paraquat for a 200-pound person.

Because of the acute oral toxicity, herbicides that contain paraquat are labeled with the ‘Danger’ signal word, which indicates that this herbicide should be handled with great care. Manufacturers of paraquat-containing herbicides add odorants to the formulated product to alert handlers of its presence. For 2020, paraquat packaging has been updated so that it reduces handler exposure and only allows transfer to application equipment. As with all herbicides, personal protective equipment should be worn when using paraquat-containing herbicides. Unlike other products, the required PPEs (personal protective equipment) are different for applicators and mixers/loaders and are summarized in Table 1.

Table 1. Summary of required PPEs for paraquat applicators and mixers/loaders.

<table>
<thead>
<tr>
<th>Handler/Applicator</th>
<th>Mixer/Loader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long sleeved shirt and long pants</td>
<td>Long sleeved shirt and long pants</td>
</tr>
<tr>
<td>Shoes plus socks</td>
<td>Shoes plus socks</td>
</tr>
<tr>
<td>Protective eyewear</td>
<td>Protective eyewear</td>
</tr>
<tr>
<td>Nitrile, rubber, neoprene, PVC, or other Class A chemical resistant gloves</td>
<td>Nitrile, rubber, neoprene, PVC, or other Class A chemical resistant gloves</td>
</tr>
<tr>
<td>Respirator with N, R, P, or HE filter</td>
<td>Respirator with N, R, P, or HE filter</td>
</tr>
<tr>
<td></td>
<td>Chemical resistant apron</td>
</tr>
<tr>
<td></td>
<td>Face shield</td>
</tr>
</tbody>
</table>

The label has also been updated as of fall 2019 to increase the safety for using the product. First, only certified applicators may handle paraquat. Second, all handlers are required to take paraquat safety training. The certificate of training will not be required for purchase, but should be carried by the handler/applicator.

The recent changes are part of a 2016 EPA decision in response to deaths caused by accidentally swallowing paraquat that was transferred to a drink bottle. The required training emphasizes the importance of storing paraquat in the original, labeled container. Training is available at https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators.

There is the potential for some confusion because there are both old and new containers of Gramaxone available. According to Syngenta officials, handlers will be bound by the requirements of the label on the container they are using.
It may be tempting to think that it would be better not to use paraquat; but it is an important tool for managing weeds, especially those that are resistant to glyphosate and other herbicides. When handled carefully, paraquat is an effective weed management tool that would be difficult to replace in terms of effectiveness on hard-to-control species like pigweeds (Figure 1).

Additional information about the new paraquat regulations can be found at https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators.

Figure 1. Paraquat provides excellent control of large pigweeds in noncropland. Photo by Sarah Lancaster, K-State Research and Extension.

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Cold winter days are returning! However, it is not always the temperature that gives the air that nip. The “feels like” temperature is usually influenced by the wind as well. We call this the wind chill.

What is the wind chill?

When temperatures drop below 50 °F and wind speeds are greater than 5 mph, the “Feels Like” temperature is lower than the actual temperature. Wind chill can be calculated two ways: 1) using the chart below, or 2) mathematically. As the wind increases and/or the temperature decreases, wind chill values decrease. This means that despite it being 0 °F on a very cold morning, when factoring in the wind (for example 20 mph), it can feel like a much colder temperature (in this example, -22 °F).

This colder “feels like” temperature can not only make you feel chilled quicker; it can also lead to other problems such as frostbite much quicker. Exposure time estimations of frostbite issues at 0 degrees F with no wind is 30 minutes, while 0 °F and 55 mph winds is less than 10 minutes of exposure. Wind chills can be determined by the following chart from the National Weather Service (https://www.weather.gov/safety/cold-wind-chill-chart):

![Wind Chill Chart](https://www.weather.gov/safety/cold-wind-chill-chart)

**Figure 1. Wind chill chart from the National Weather Service.**

Where can you access wind chill data?

The Kansas Mesonet makes viewing the wind chill very easy! We have put together a webpage
depicting current wind chill via a gradient map here: mesonet.ksu.edu/weather/wind chill

It is also accessible by clicking the banner on the Kansas Mesonet homepage, mesonet.ksu.edu. The map defaults to the current wind chill, but also has a selection at the top where you can change the map to view temperature and wind speed/direction. Since these are the two ingredients for the wind chill, it tells the complete story. The table below the map also displays the wind chill, temperature, and wind data for each station in sortable columns. By clicking the column headings, that particular column will sort from lowest to highest values. Click it again and it will reverse the order. You can also select a specific station either on the map or in the data table and it will display the specific information for that location.

![Map of wind chills as of 12/31/2019 at 8:07 am.](image)

**Figure 2. Map of wind chills as of 12/31/2019 at 8:07 am.**

How many hours has the temperature been below freezing?

Winter wheat and cover crop producers still have an interest in the cold temperatures. The freeze monitor data is available on our webpage as well. It allows you to track the hours below 32 or 24 °F thresholds useful for permafrost development or winter wheat/cover crop damages. You can access this information via the menu in the top left (Weather à Freeze Monitor) or at: mesonet.ksu.edu/weather/freeze
Figure 3. Hours below 24 °F as of 8:04 am on 12/31/2019.

Stay warm and safe on these chilly days! Winter has only just begun.

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Registration is open for the Midwest Cover Crops Council Annual Conference, Feb. 11-12, 2020, in Kansas City, Mo.

The event will be at the KCI Expo Center. Twelve states and one Canadian province belong to the council.

The conference will have sessions on both row crop and cattle operations due to the large number of producers in the Kansas City area producing both grain and livestock.

Event sponsors include MU Extension, K-State Research and Extension, University of Nebraska Extension, and USDA Natural Resources Conservation Service. Speakers include faculty from MU, University of Nebraska, and Kansas State University, as well as cattle producers and representatives from NRCS and cattle companies. Sessions include:

- Selecting and Managing Cover Crops
- Weed and Herbicide Interactions Using Cover Crops
- Incorporating Cover Crops in Cattle Operations
- Cover Crop Environmental and Economic Benefits
- Cash Crop Interactions with Cover Crops
- Farmer Panel Discussion

Sessions will look at using cover crops in row crop production, livestock and grazing, as well as environmental and economic issues. Details are available at mccc.msu.edu/about/meetings. The meeting is open to the public.

Register online at event.me/E5WdBD or mccc.msu.edu/about/meetings.

Learn more about MCCC and cover crops at mccc.msu.edu.
4. Still time to register for the 2020 K-State Corn Schools

The Department of Agronomy and K-State Research and Extension, in partnership with Kansas Corn, are planning to host six Corn Management Schools in 2020. These schools are designed to provide in-depth training for corn producers across Kansas. While each school’s agenda is tailored for the location, the corn schools will connect with an overall theme of “maximizing advancements in your operation”. Participants will have the opportunity to hear the latest research and production information, get updates on corn issues and network over lunch. The corn schools are free for farmers to attend.

The schools will cover a number of issues facing corn producers in each region including Farm Bill options, weed control, insect resistance, fertility management, disease management, and late-planting seasons.

**Corn Management Schools**

The dates and locations are:

- **January 6** - Montezuma (optional Corn-Fed Beef Seminar to follow)
  Hy-Plains Feedyard
  7505 U.S. Hwy 56
  Montezuma, KS 67867

- **January 8** – Parsons
  Southeast Area Extension Office
  25092 Ness Rd.
  Parsons, KS 67357

- **January 10** – Wichita
  Sedgwick Co. Extension Office
  7001 W 21st St.
  Wichita, KS 67205

- **February 3** – Oakley
  Buffalo Bill Cultural Center
  3053 US-83
  Oakley, KS 67748

- **February 5** – Salina
  Hilton Garden Inn
  3320 S 9th St,
  Salina, KS 67401

- **February 7** – Olathe
  John Deere Ag Marketing Center
  10789 S Ridgeview Rd
Each school will run from 9:00 am to 2:00 pm with lunch provided. On-site registration for each school will begin at 8:30 a.m.

The school and lunch are offered at no cost, but participants are asked to pre-register before Jan. 3 for the January schools and before Feb. 4 for the February schools. Farmers can register online at kscorn.com/cornschool, by phone by calling Kansas Corn at 785-410-5009, or at their local extension office.

CCA and CEU credits have been applied for. Additional sponsors include Pioneer and John Deere.

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5. Don't miss the K-State Soybean Schools - January 2020

A series of six K-State Soybean Production Schools will be offered in January to provide in-depth training targeted for soybean producers and key-stakeholders. The schools are sponsored by the Kansas Soybean Commission.

The schools will cover a number of issues facing soybean growers including: weed control, crop production practices, nutrient management and soil fertility, insects, disease management, and market outlook.

The dates are set and specific locations have been chosen with Schools located across the state.

**January 13 – Monday**

- **Smith Center, KS** - 9:30 am to 1:30 pm
  St. Mary’s Catholic Church Parish Hall
  403 W. Highway 36
  Contact: Sandra Wick, swick@ksu.edu
  RSVP by January 8

- **Salina, KS** - 3:30 to 7:30 pm
  Webster Conference Center
  2601 North Ohio Street
  Contact: Jay Wisbey, jwisbey@ksu.edu
  RSVP by January 8

**January 14 – Tuesday**

- **Mulvane, KS** - 9:30 am to 1:30 pm
  Pix Community Center
  101 E Main St
  Contact: Randy Hein, rvhein@ksu.edu; Jeff Seiler, jseiler4@ksu.edu
  RSVP by January 8
January 21 - Tuesday

- **Emporia, KS** - 3:30 pm to 7:30 pm
  Anderson Building
  Lyon County Fairgrounds
  2650 W US Hwy 50
  Contact: Brian Rees, brees@ksu.edu
  RSVP by January 16

January 22 – Wednesday

- **Atchison, KS** - 9:30 am to 1:30 pm
  Cedar Ridge Restaurant (4 miles NW of Atchison)
  17028 318th Rd.
  Contact: Ray Ladd, cladd@ksu.edu
  RSVP by January 17

- **Marysville, KS** - 3:30 to 7:30 pm
  Marysville Helvering/Senior Center
  111 S 8th St (Please use the west door)
  Contact: Anastasia Johnson, anastasia@ksu.edu
  RSVP by January 17

On-site registration will begin 30 minutes prior to the program start time. A meal will be provided courtesy of our sponsors. There is no cost to attend, but participants are asked to **pre-register, if possible, for the school they plan to attend**. Online registration is available at K-State Soybean Schools ([http://bit.ly/KSUSoybean](http://bit.ly/KSUSoybean)) or by emailing/calling the nearest local K-State Research and Extension office for the location participants plan to attend.
DATES & LOCATIONS
MONDAY, JANUARY 13
Smith Center | 9:30 a.m. — 1:30 p.m.
Salina | 3:30 — 7:30 p.m
TUESDAY, JANUARY 14
Mulvane | 9:30 a.m. — 1:30 p.m.
TUESDAY, JANUARY 21
Emporia | 3:30 — 7:30 p.m
WEDNESDAY, JANUARY 22
Atchison | 9:30 a.m. — 1:30 p.m.
Marysville | 3:30 — 7:30 p.m

REGISTRATION
Registration will begin 30 minutes before the scheduled start time for each of the free schools. A meal will be provided.

TOPICS
The one-day schools will cover issues facing soybean producers.
Weed Control | Crop Production | Soil Fertility | Pest Management

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Kansas State University Department of Agronomy
2004 Throckmorton Plant Sciences Center | Manhattan, KS 66506
6. K-State Sorghum Schools scheduled for late January

Three K-State Sorghum Production Schools will be offered in late January to provide in-depth training targeted for sorghum producers and key-stakeholders. The schools are sponsored by Kansas Grain Sorghum Commission.

The schools will cover a number of issues facing sorghum growers: risk management, marketing opportunities, weed control, crop production practices, nutrient and soil fertility, and insect management.

- **January 29, Wednesday – Scott City**

  2:30 p.m. to 7:00 p.m.
  William Carpenter 4 H Building
  608 North Fairground Road

  Contact: John Beckman - jbeckman@ksu.edu

- **January 30, Thursday – Great Bend**

  8:30 a.m. to 1:00 p.m.
  Great Bend Recreation Commission
  Burnside Room, 1214 Stone Street

  Contact: Stacy Campbell - scampbel@ksu.edu

- **January 30, Thursday – Hutchinson**

  2:30 p.m. to 7:00 p.m.
  South Hutchinson Community Building
The schools are free to attend and a meal will be provided courtesy of the Kansas Grain Sorghum Commission. Participants are asked to pre-register by January 27. Online registration is available at K-State Sorghum Schools (http://bit.ly/KSUSorghum) or by emailing/calling the nearest local K-State Research and Extension office for the location participants plan to attend.

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Kathy Gehl, eUpdate Editor and Extension Program Coordinator

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DATEs & LOCATIONS
WEDNESDAY, JANUARY 29
Scott City, KS
2:30 — 7:00 p.m

THURSDAY, JANUARY 30
Great Bend, KS
8:30 a.m. — 1:00 p.m
Hutchinson, KS
2:30 — 7:00 p.m

REGISTRATION
A meal will be provided at each of the free schools.
RSVP requested by Monday, January 27.

TOPICS
The one-day school will cover issues facing sorghum producers.
Weed Control | Crop Production | Pest Management | Soil Fertility
K-State Research and Extension will host the 17th annual Cover Your Acres Winter Conference for crop producers and consultants on January 14-15 at the Gateway Center in Oberlin, Kansas.

Cover Your Acres is a producer-driven meeting focused on new ideas and research-based updates in crop production in northwest Kansas and the central High Plains region.

The conference, which typically draws more than 400 attendees from Kansas and other states, highlights the latest technology, methods, and conservation practices to improve crop production in the region. This year it will feature university specialists and industry representatives discussing the following topics:

- Alternative crops – What we know, don’t know, and should be thinking about
- Beyond grain: The value of wheat in the production chain
- Cover crops as a weed management tool
- Current financial status of Northwest Kansas farms
- Insect management in dryland corn
- Planter technology advancements
- Soil testing – Interpretations matter
- The war on weeds
- What drives efficiency and profitability in irrigated corn?
- What does a food company care about soil? An intro to General Mills’ Ag Commitment
- Producer panel discussion

The same programs will be offered both days of the conference. Registration will begin at 7:45 a.m. with educational sessions ending at 5:00 p.m. The sessions are followed by a social on Tuesday evening where attendees can visit with industry and university specialists while enjoying heavy hor d’oeuvres.

Early registration is due by January 8. The fee is $50 for Tuesday, January 14th, $45 for Wednesday, January 15th, or $65 for both days. After January 8, the cost is $65 per day. The conference fee includes lunch, morning and afternoon refreshments, and educational materials. The program offers a total of 10 continuing education unit (CEU) credits for Certified Crop Advisors and 2 CEUs for Commercial Applicators.

To view the conference details and for online registration, visit [www.northwest.ksu.edu/coveryouracres](http://www.northwest.ksu.edu/coveryouracres). For questions, call 785-462-6281.
