Issue 892

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Extension Agronomy

eUpdate

02/10/2022

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.

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1. Pre-plant herbicide applications for kochia control

Now is the time to finalize plans for kochia control. Recent research suggests that kochia can begin emerging in early February with most kochia emerging by early April. Kochia seedlings emerge in dense populations that make adequate herbicide coverage difficult (Figure 1). In addition, glyphosate-resistant kochia is prevalent across western Kansas, making kochia control even more challenging. For these reasons, it is important to apply pre-emergence herbicides in late winter or early spring to control this weed before it emerges. This article will be the first in a series discussing specific options for various cropping scenarios.

Figure 1. Emerged kochia seedlings in a fallow field. Photo by Vipan Kumar, K-State Research and Extension.

Herbicide program components to effectively manage kochia at germination

To successfully manage kochia, a herbicide program needs two components:

1. a very soluble and effective herbicide that can be incorporated with very little precipitation, such as dicamba; and

2. a herbicide that has longer residual activity, which will require perhaps 0.75 inches or more precipitation for adequate incorporation, such as atrazine.

Precipitation events during late winter are often too small to activate longer residual herbicides, but dicamba may control kochia for 4 to 6 weeks until the longer residual herbicide is incorporated.

The best timing to apply herbicides for kochia control is generally January through the first week of March but **prior** to kochia emergence, which can vary depending on weather conditions. Later applications, for example, at the time of burndown, are more likely to occur after kochia emergence, which increases the risk of control failure (Figure 2). Fall-applied treatments can help ensure timely application, however, they are not likely to effectively control later flushes of kochia (Figure 3).

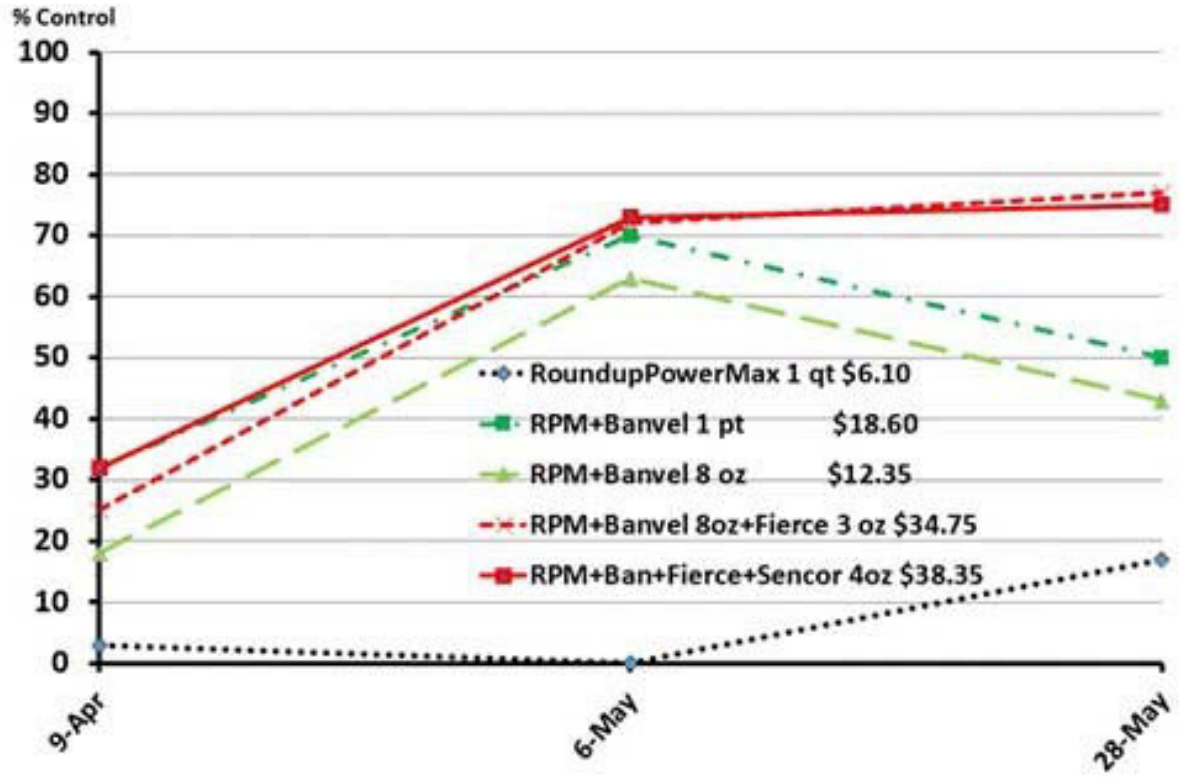

Figure 2. EPP/POST herbicides applied March 10, 2015 for kochia control at Tribune, KS. Kochia at cotyledon stage. Graph by C. Thompson, K-State Research and Extension.

Figure 3. Duration of anticipated kochia control greater than 80% following fall (December 4) and spring (February 23) herbicide applications at two locations during 2015. Data from Vipan Kumar, K-State Research and Extension.

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2. Topdressing canola: How to maximize the benefits

To maximize the yield potential of winter canola, producers should topdress with nitrogen (N), sulfur (S), and possibly boron in the winter. Producers should make topdress applications with consideration for the environmental conditions, the nutrients needed, and the application method.

Environmental conditions

The typical time to topdress winter canola is during the rosette stage. Usually this can be accomplished in January or February, since temperatures are cold enough to keep canola at the rosette stage. Current drought conditions for most of Kansas might pause topdressing at this time until moisture is available to incorporate the fertilizer into the soil.

In general, temperatures during the canola growing season have been warmer than normal with a few periods below normal. Temperatures have been cold enough that we are seeing the typical winter response of white and brown colors as leaves loose chlorophyll. When these leaves are pulled back, the majority of plant crowns are green and firm, indicating the plants are alive. However, final winter survival ratings should not be taken until the crop begins to break dormancy and after the threat of further cold temperature loss has passed.

Under all circumstances, producers should check their fields for surviving plants before applying a topdress application even if there is no concern for poor winter survival (Figure 1). Where stand thinning is observed, it may be advisable to wait until canola is actively growing again before topdressing. This will ensure that there is adequate spring stand to take to harvest.

Figure 1. Canola beginning to break dormancy at the appropriate time for topdressing. Photo by Mike Stamm, K-State Research and Extension

Nutrients

A combination of nitrogen and sulfur can be used in the topdressing blend.

Nitrogen. About two-thirds of the total N needed by the canola crop should be applied as a winter topdress. This can be done at dormancy or as plants begin to show increased growth, but before the plants bolt. The reason is that N uptake increases rapidly before bolting. Topdress applications should be based on an updated assessment of yield potential, less profile residual N, and the amount of N applied in the fall.

Suggested N rates for five yield levels and a soil with 2 percent organic matter and varying residual nitrate-N levels is shown in Table 1.

For soils with 1 percent organic matter, add 15 pounds N for each yield and nitrate level. For soils with 3 percent organic matter, subtract 15 pounds N for each yield and nitrate level.

Table 1. Total nitrogen fertilizer needs for canola as affected by yield potential and soil test nitrogen levels in the southern Great Plains (from Great Plains Canola Production Handbook: http://www.ksre.ksu.edu/bookstore/pubs/mf2734.pdf

Profile N test	Canola yield potential				
lb/acre	lb/acre				
	1,500	2,000	2,500	3,000	3,500
0	75	100	125	150	175
20	55	80	105	130	155
40	35	60	85	110	135
60	15	40	65	90	115
80	0	20	45	70	95
100	0	5	25	50	75

Either solid or liquid forms of N can be used. Once the weather warms and growth begins, applications using streamer bars or solid materials are preferred for broadcast applications to prevent/avoid leaf burn.

Controlled-release products such as polymer-coated-urea (ESN) might be considered on very sandy soils prone to leaching, or poorly drained soils prone to denitrification. Generally, a 50:50 blend of standard urea and the coated urea -- which will provide some N immediately to support bolting and flowering and also continue to release some N in later stages of development -- works best in settings with high loss potential.

Sulfur. If canola is deficient in S, the consequences can be very serious because the crop needs S to produce protein in the seed. For this reason, soils having less than 20 lb/acre sulfate-S in the upper 24 inches should receive supplemental S. A good rule to follow is to keep S-to-N availability at a ratio of about 1 to 7. Another simple guideline is to apply 20 lb S per acre, which will be sufficient for low and medium yield levels. Sulfur can be applied in the fall and incorporated into the seedbed or surface-applied with N in the winter topdressing. Canola growers may consider using elemental S, or sulfate forms (e.g. ammonium sulfate, or liquid ammonium thiosulfate). Since elemental S must oxidize to become plant available, it should only be applied in the fall. Ammonium thiosulfate or ammonium sulfate can be applied in the spring or fall, but thiosulfate should not be topdressed directly on green tissue or placed with seed to avoid short-term phytotoxicity.

Boron. If deficient, boron is one micronutrient that can have negative consequences on canola yield. Typically, boron deficiency is not something we have seen in Kansas. However, if there are micronutrients that could influence yield, then boron would be one of them. The most important thing is to know what your soil sample states. Applying boron may help to reduce flower abortion and enable efficient pod filling. However, there is not much room for error when comparing adequate boron fertility levels and toxic levels that might result from over application. Because of this, application rates of boron are often 1.0 lb per acre or less. Soil and foliar applications of boron are effective. Foliar applications can be made with herbicides, and soil-applied boron can be either broadcasted or banded. Make sure applications are uniform across the field to avoid toxicity, and avoid contact with the seed for band-applied boron.

Application method

It is important to avoid crushing winter canola with wide applicator tires. Crushed plants will lodge and maturity will be delayed, which can slow harvest and increase the risk of shattering losses. For this reason, applicators with narrow tires are preferred. As for the question of whether broadcast or banding is best -- if temperatures are cold and the plants are dormant, topdress fertilizer can be broadcast. If temperatures are mild enough that the canola plants have resumed active growth, it

may be best to use streamer bars or some other form of banded application to avoid foliar burn.

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3. 2021 Kansas Summer Annual Forage Hay and Silage Variety Trial results now available

The results of the 2021 Kansas Performance Tests with summer annual forage varieties are available online at https://www.agronomy.k-state.edu/services/crop-performance-tests/forages/2021-forage-performance-tests.html. The results are summarized by location (Garden City, Hays, and Scandia) and are split into hay and silage categories. The results can be viewed by clicking the "Data Tables" link at the website listed above and downloading the document. At this time, only the yield results are available. Forage quality results will be posted in the next few weeks.

Summer annual forage performance tests are conducted each year by the Kansas Agricultural Experiment Station (Figure 1). The objectives of the Kansas Summer Annual Forage Variety Trial are to evaluate the performance of released and experimental varieties, determine where these varieties are best adapted, and increase the visibility of summer annual forages in Kansas. Breeders, marketers, and producers use data collected from the trials to make informed variety selections. The Summer Annual Forage Trial is planted at locations across Kansas based on the interest of those entering varieties into the test.

This work was funded in part by the Kansas Agricultural Experiment Station and seed suppliers. Sincere appreciation is expressed to all participating researchers and seed suppliers who have a vested interest in expanding and promoting annual forage production in the U.S.

Figure 1. Harvesting a forage variety trial at the Southwest Research and Extension Center in Garden City, KS. Photo from John Holman, K-State Research and Extension.

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4. Kansas Ag-Climate Update for January 2022

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.

January 2022: Consistent temperature across the state

Statewide average temperature for the month was 29 °F.There were no obvious gradients from the north to the south and from the east to the west. It was only about 1.4 °F cooler than normal and was uniformly distributed across the state. The monthly temperature ranked as 64th coolest and 65th warmest month during the past 128 years.

Climatologically, January precipitation in Kansas is the least amount of rainfall (0.74") in a year. This month was slightly drier on average across the state (0.15 inch departure from the normal). It ranked as the 37th driest month during the past 128 years.

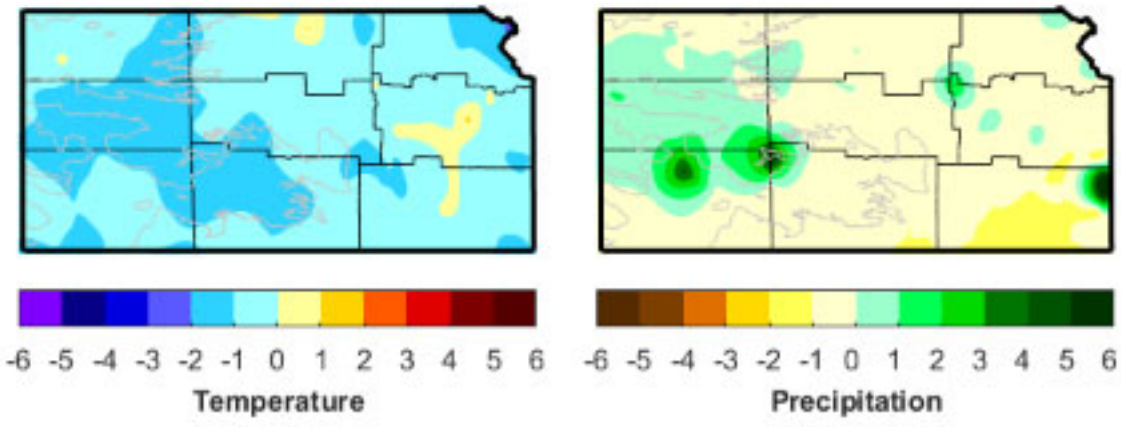

Figure 1. Departures from normal temperature (°F) and precipitation (inches) for January 2022.

View the entire January 2022 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. 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 list of the remaining webinars, with dates, topics, and speakers is detailed below.

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

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