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Research and Extension

Extension Agronomy

eUpdate

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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. 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 best time to topdress winter canola is during the rosette stage when the canola is dormant. Usually this can easily be accomplished by topdressing in January or February, since temperatures are cold enough to keep canola at the rosette stage. If N is applied as a liquid when canola is green and physiologically active, be careful that the rate applied does not cause leaf burn. Both dry and liquid fertilizers are effective products.

Current conditions for most of Kansas are wet. The greatest limitation to topdressing at this time will be waiting for the ground to freeze up or to dry out. After a brief stretch of below-normal temperatures in early November 2019, a warmer December caused the crop to actively grow and add new leaf area. In some areas, the canola may have more green leaf area than what we typically see at this time of the growing season. Canola can withstand these warmer periods and still successfully overwinter as long as the temperature swings are not too dramatic.

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 greatest, 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 lb/acre	Canola yield potential 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 in the early spring. 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 (10 ppm SO₄-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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2. Review of herbicide label requirements: Enlist One and Enlist Duo

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

The Enlist herbicide resistance trait is available in certain transgenic (GMO) varieties of three crops: corn, cotton, and soybean. Enlist corn is tolerant of 2,4-D, glyphosate, and 'fop' graminicides; Enlist cotton is tolerant of 2,4-D, glyphosate, and glufosinate (Liberty, etc.); and Enlist E3 soybeans are tolerant of 2,4-D, glyphosate, and glufosinate. However, the only 2,4-D formulations labeled for use in-crop are Enlist One (2,4-D) and Enlist Duo (2,4-D plus glyphosate). These products contain 2,4-D choline, which is intended to reduce off-target movement of the herbicide. Similarly, Assure II is the only graminicide labeled for use in Enlist corn.

Some of the unique label requirements to be aware of when using Enlist One or Enlist Duo are listed below.

- Apply between emergence and V8 or 30 inches (whichever happens first) in corn or R2 (full flowering) in soybean. In cotton, the application window is emergence through mid-bloom.
- Use only specified tank-mix partners found at EnlistTankMix.com
- Use only approved nozzles, found at EnlistTankMix.com
- Only spray when wind speed is less than 15 mph and when wind direction is away from sensitive crops.
- Maintain a 30-foot downwind buffer between treated area and sensitive areas.
- Do not spray in temperature inversions. Monitor temperature inversions using the Kansas Mesonet Inversion tool: <http://mesonet.k-state.edu/agriculture/inversion/>
- Use 10-15 GPA of water – do not use liquid N as a carrier.
- Clean sprayer thoroughly after application.

In addition, some growers last summer experienced tank-mix compatibility issues when mixing Enlist One with some glyphosate formulations. As a result, Corteva is recommending at least 5 minutes of agitation after adding any AMS product and 2-3 minutes between other products.

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3. 2019 Kansas Performance Tests with soybean varieties report now available

The [2019 Kansas Performance Tests with Soybean Varieties](#) report is now available. In this report, you will find a recap of the 2019 soybean crop, with a detailed discussion summarizing the statewide growing conditions. More importantly, the results of the 2019 soybean performance tests are also shown.

Soybean performance tests are conducted each year to provide information on the relative performance of new and established varieties and brands at several locations in Kansas.

The 2019 soybean season had a distinct weather pattern with a very challenging end of the season. Performance of soybean varieties or brands varies from year to year and from location to location, depending on factors such as weather, management practices, and variety adaptation. When selecting varieties or brands, producers should carefully analyze variety performance for two or more years across locations. Performance averaged over several environments will provide a better estimate of genetic potential and stability than performance based on a few environments.

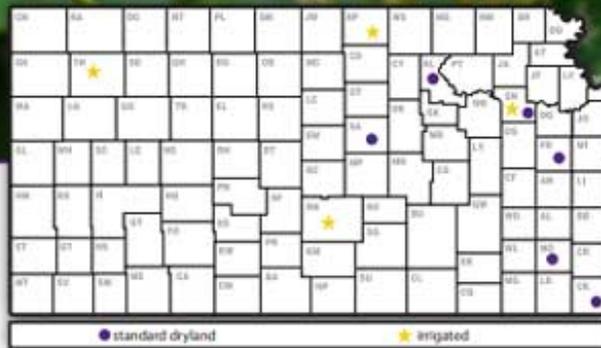
The online version of the 2019 Kansas soybean performance tests can be found at: <https://bookstore.ksre.ksu.edu/pubs/SRP1153.pdf>. Hard copies can also be ordered from the KSRE Bookstore.

Test results can also be found online at: <https://www.agronomy.k-state.edu/services/crop-performance-tests/soybean/>

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2019 Kansas Performance Tests with

Soybean Varieties



Report of Progress 1153



Kansas State University Agricultural Experiment Station and Cooperative Extension Service

4. It is not too late to attend a K-State Corn School

The last three Corn Management Schools will be held in February at locations in northwest, north central, and northeast Kansas. These schools are hosted by the Department of Agronomy and K-State Research and Extension, in partnership with Kansas Corn. Each school is 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:

- **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
Olathe, KS 66061

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. If possible, farmers are asked to pre-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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