K-STATE Research and Extension

Extension Agronomy

eUpdate

02/18/2021

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. Potential for winterkill to the Kansas wheat crop

The extremely cold temperatures observed in Kansas in mid-February 2021 have the potential to cause winterkill to the winter wheat crop. However, several factors determine whether winter wheat will actually survive the winter. The most important factors from the crop's perspective include proper cold hardening and root system development, as well as the overall crop status in terms of damage from pests. From an environmental perspective, important factors include air temperature and the consequent soil temperature at the crown level, as well as snow cover and soil moisture content.

Crop condition

The crop conditions of the Kansas wheat crop are variable depending on region and planting date. Some of the fields planted early were able to capitalize on a few rainfall events that happened mid -September and attain a good stand establishment and early development. For the large majority, these would include wheat fields planted after a fallow period in western Kansas (about 57-66% of the crop in western Kansas, Figure 1), and after a wheat or after a canola crop in central Kansas (about 32-49% of the crop in central Kansas, Figure 1). For the most part, these fields emerged by the first week of October (Figure 1) and were able to produce a good number of tillers, as well as good root development, improving its winterhardiness. The remainder of the crop around the state was likely planted after corn in western Kansas or after soybeans in central Kansas. Even if these fields were planted relatively on time (i.e., sometime in October in central Kansas), the emergence rate was considerably lower due to a lack of precipitation during October and into November. Consequently, as much as 36% of the Kansas crop emerged as late as November, depending on the region of the state (Figure 1). These fields had a much more limited development in the fall both in terms of tillers and root, owing to a combination of a late emergence and cool and dry weather conditions. Thus, fields in this condition will be more exposed to potential consequences of the cold temperatures.

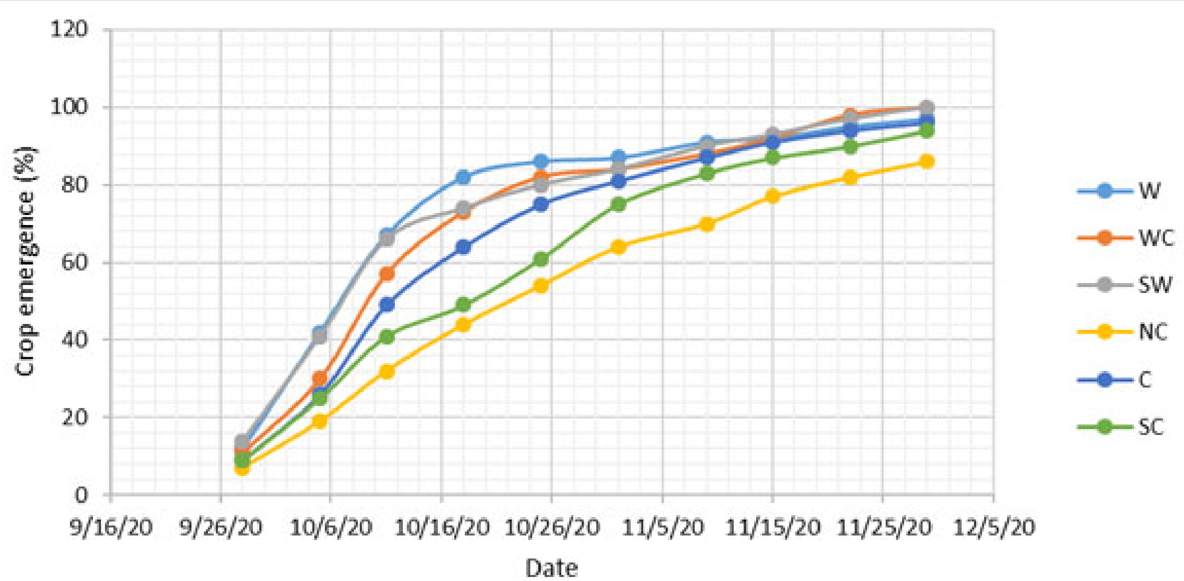

Figure 1. Percent emergence of winter wheat as a function of date for the six major winter

wheat producing regions of Kansas: West, West Central, Southwest, North Central, Central, and South Central. Data courtesy of USDA-NASS.

The dry conditions experienced during October and into November extended through the winter wheat growing season for the majority of western and central Kansas – except for the south central and southeast portions of the state (Figure 2). In fact, total precipitation from September 1, 2020 through February 8, 2021 (prior to the extreme cold temperatures) was less than 4 inches for a large portion of the wheat growing region in Kansas (Figure 2), which decreased crop growth and development during the fall and early winter.

A well-developed crop, in fields that emerged in mid-September to early-October, can handle air temperatures during the winter in the single digits fairly well. However, soil temperatures at the single digits can cause significant damage and winterkill. A less developed crop, such as that fields emerged in late October or afterwards, will be more sensitive to winterkill with higher temperature thresholds for damage.

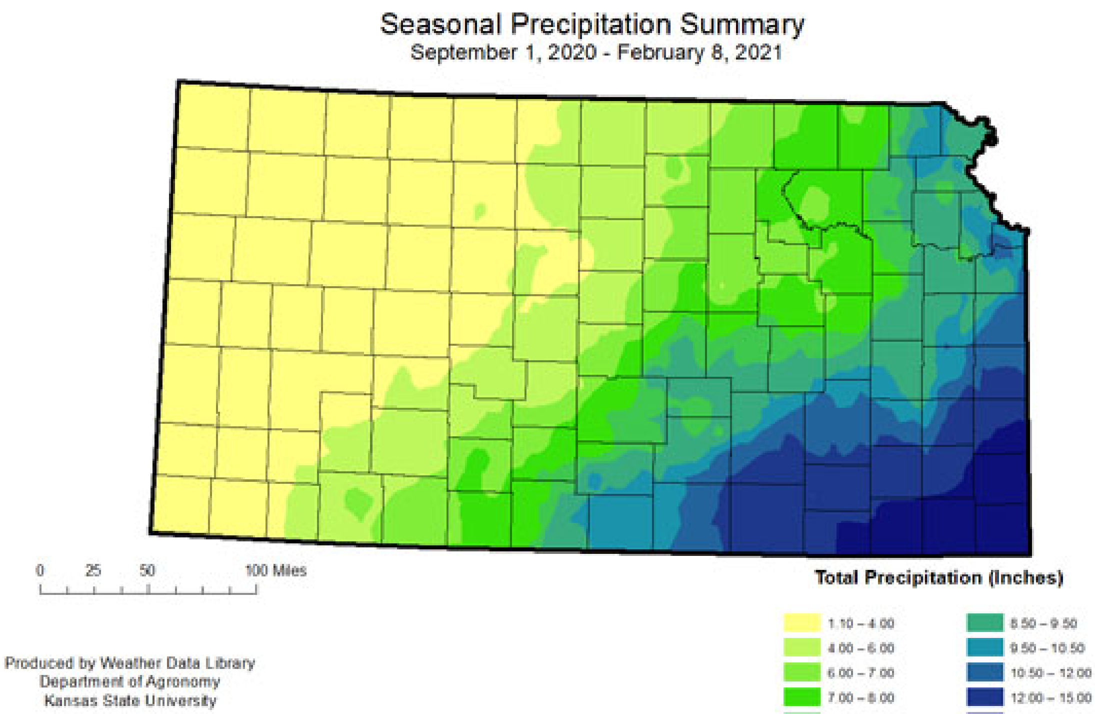

Figure 2. Total precipitation during the winter wheat growing season (September 1, 2020 – February 8, 2021) for Kansas. Map courtesy of the Kansas Weather Data Library.

Weather conditions: Air and soil temperatures

The lowest air temperatures ranged from -11°F in south central Kansas to -29°F in north central Kansas, with the majority of the temperatures in northwest Kansas ranging from -18 to -26°F (Figure 3). These temperatures would be low enough to cause leaf burn and, if soil temperatures reached these levels, winterkill. While average soil temperatures in in the February 10-17 period were usually above 20°F (data not shown), the lowest soil temperatures dropped as low as 5 to 14°F (Figure 3). Soil temperatures in the low teens or single digits occurred mostly in northwest Kansas, but were also present in parts of southwest and central Kansas.

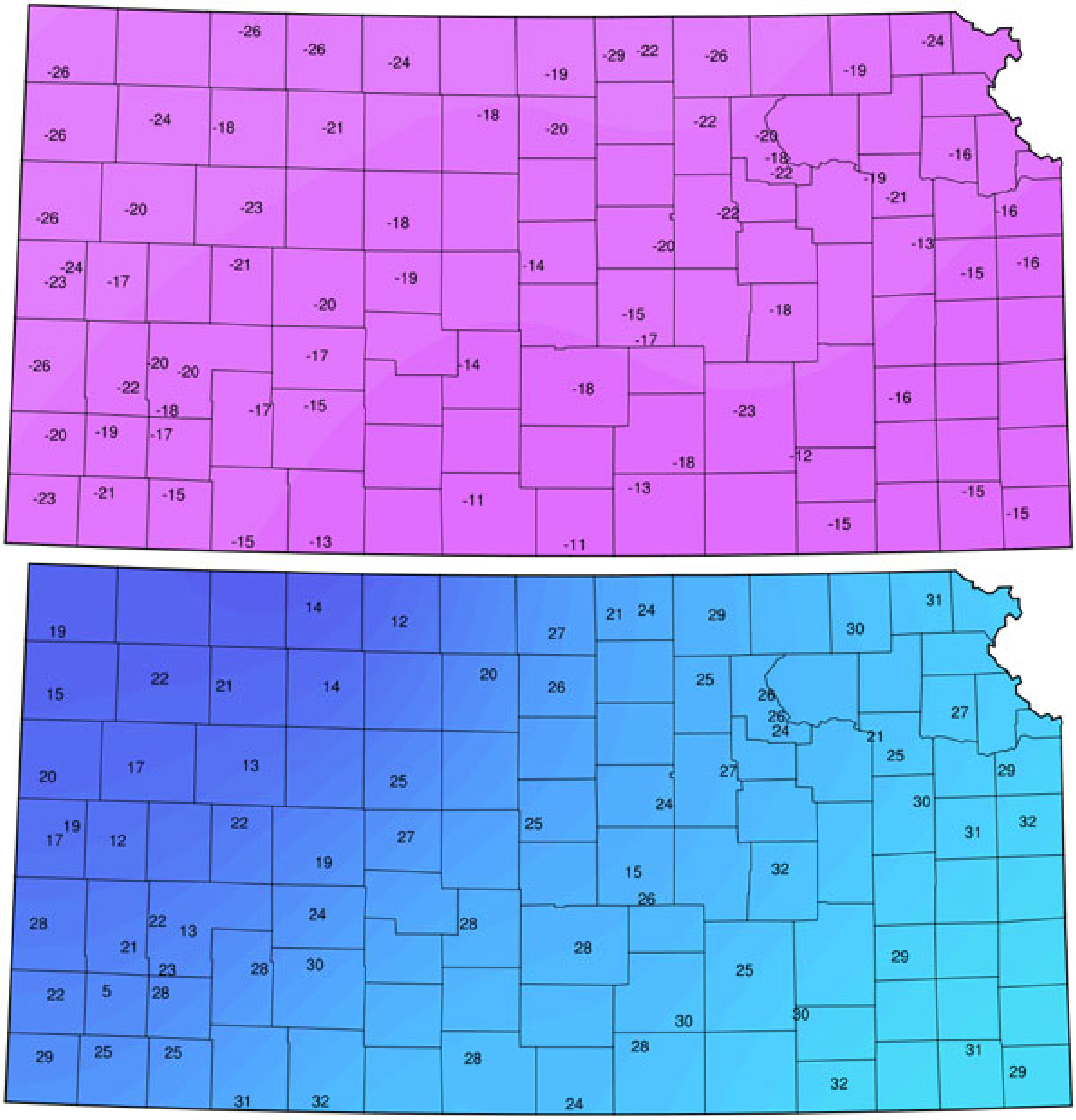

Figure 3. Lowest air temperatures (upper panel) and soil temperatures (lower panel) measured in the period between the last time a 32°F measurement occurred and February 17, 2021. Map courtesy of the Kansas Weather Data Library.

Weather conditions: Soil moisture and snow cover

Two environmental factors that affect the crop's response to cold temperatures due to their potential of buffering of low air temperatures are soil moisture content and snow cover. The dry spell observed in central, north central, and western Kansas prior to the cold spell (Figure 2) also resulted in very low topsoil moisture (data not shown), which did not help in buffering the lower air temperatures.

Regarding snow cover, the majority of the wheat growing region of Kansas received from 1 to 2 inches of snow, with the extreme north and southern borders receiving up to ~4 inches but the central portion of the state receiving virtually no snowfall (Figure 4). Reports also suggest that this snow was relatively dry and light-weight, decreasing its buffering potential, especially compared to the totals achieved in the neighboring states of Oklahoma (up to 10 inches) and Nebraska (up to 20 inches). Regions receiving 1-2 inches of snow probably had some buffering of the low air temperatures and may have helped in the current spell. For example, stations where snowfall was reported had lowest minimum soil temperatures of ~24-28°F, versus 15 degrees reported in a neighboring station without snowfall. Still, the combination of extremely cold air temperatures and dry soils, with a limited amount of snow across the majority of the state, might have caused damage to some fields.

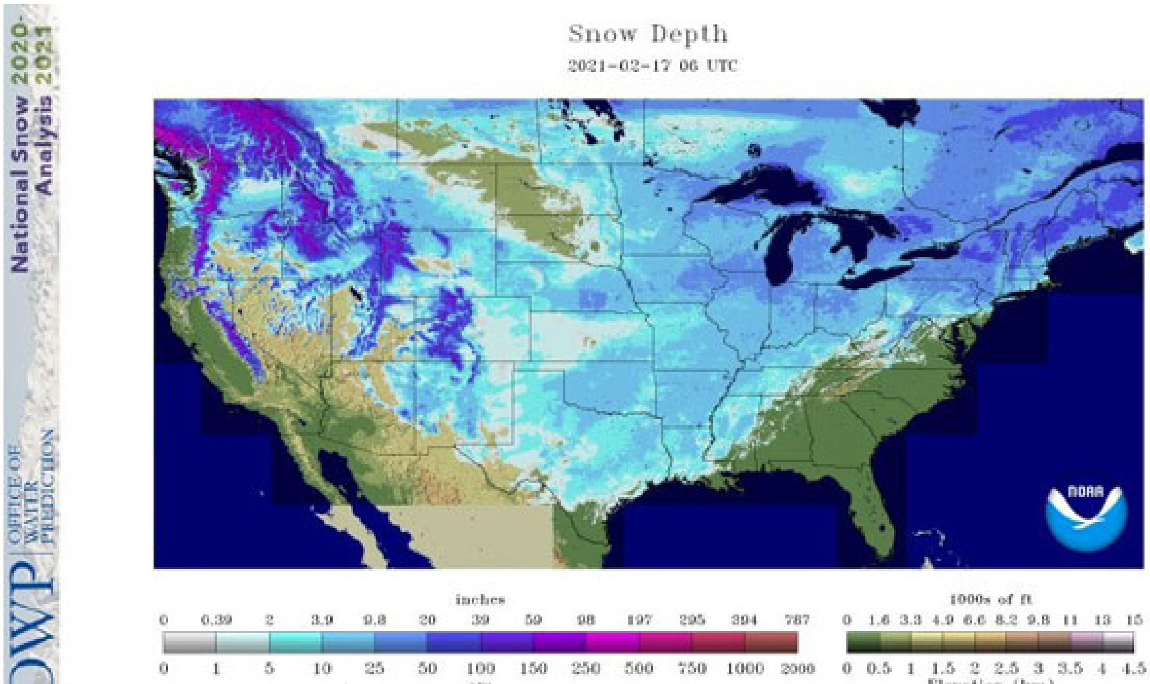

Figure 4. Snow depth as of February 17, 2021 as reported by the National Oceanic and Atmospheric Administration.

What is the potential for damage and what to look for?

The biggest potential for winterkill is in fields that emerged late (thus, with limited tiller and root development), where snow cover was limited (<2 inches), and in regions which soil temperatures reached low teens to single digits. Some of the regions of concern seem to be central Kansas (due to limited snow depth) and northwest Kansas (due to extremely cold temperatures). The conditions were less prone to winterkill in south central Kansas due to greater levels of soil moisture and snow depth.

The next 4-6 weeks will be crucial to determine the recovery potential of the crop. Ideally, precipitation would alleviate the current dry conditions and temperatures would warm up slowly so that the crop can start spring development. Continuation of the dry conditions can further impair crop recovery.

There is nothing growers can do at the moment, other than wait until green-up for further evaluation of the crop. As wheat green-up progresses, any winter injury will become more apparent. Injured wheat may initially green up, then go backwards.

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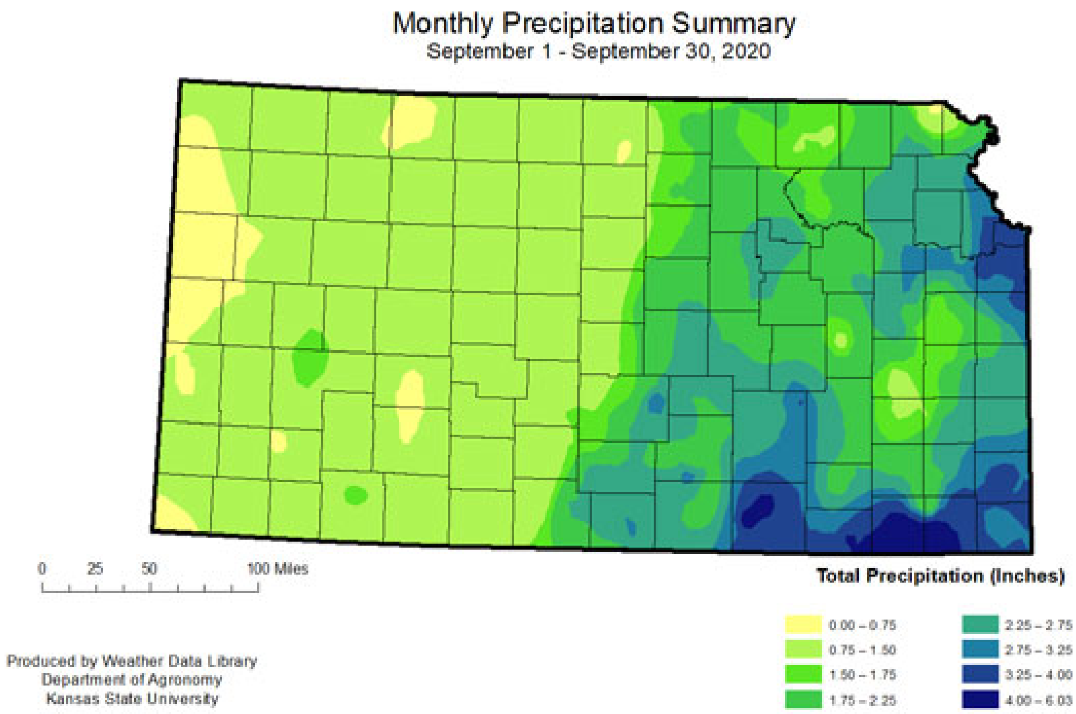
2. Expectations for a late-emerged winter wheat crop

Many fields in Kansas emerged late (from late October into November) during the 2020 growing season due to extremely dry conditions during the fall, especially in October when the bulk of the wheat is planted around the state. While some precipitation occurred until mid-September, October precipitation was mostly less than 0.5 inches for most of north-central and western Kansas and did not happen until the later portion of the month (Figure 1).



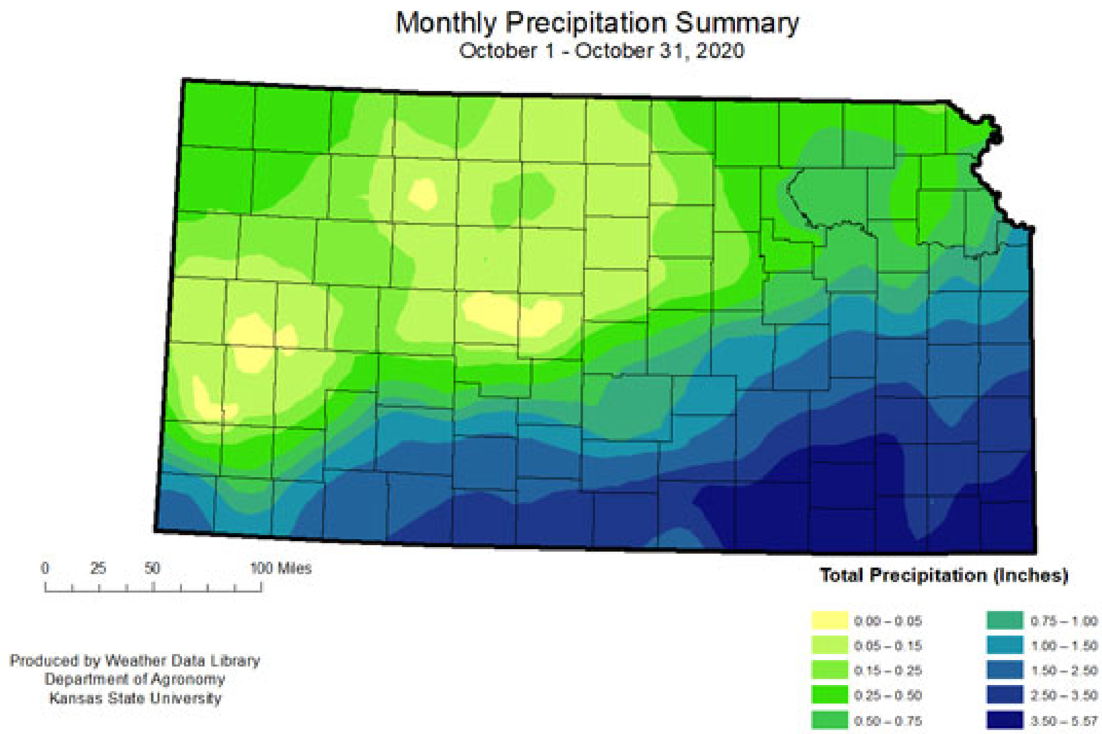


Figure 1. Total precipitation during the months of September and October 2020. Graph courtesy of the Weather Data Library.

Consequently, even wheat fields that were planted on a good timing resulted in a late-emergence. Late-emerged winter wheat has considerably less yield potential than a crop emerged at the optimum time. Producers will have to decide whether maintaining the crop is a viable option – especially as the late-emerged crop might be more exposed to winterkill from the recent cold temperatures (see the accompanying article on potential for winterkill).

Reasons for the generally observed decreased yield potential with a delay in sowing date include:

- **Less fall tillering potential**: fall-formed tillers are generally more productive than spring-formed tillers. When wheat is sown late, it will have less time to tiller in the fall, which decreases the production of higher yielding tillers as well as total tiller production.
- **Delayed cycle**: late sowing often delays the entire crop cycle as compared to a crop sown earlier. As a consequence, the grain filling period might occur a few days later and under hotter air temperature conditions, which decreases yield and test weight.
- **Greater exposure to winterkill**: a wheat crop with 3 – 5 fall-formed tillers has greater cold tolerance than a crop that has only one or two tillers. As a consequence, late-sown fields might be more exposed to winterkill, especially in dry conditions.

Research conducted by Merle Witt with late-sown wheat in Garden City from 1985 through 1991 is summarized in Figure 2. Averaged across all these years, delaying wheat sowing from October 1 to November 1 delayed heading date by 6 days and decreased wheat yields in 23%. The grain-filling period was progressively shortened by about 1.7 days and occurred under hotter temperatures (about 1.5°F) for every month of delay in sowing date.

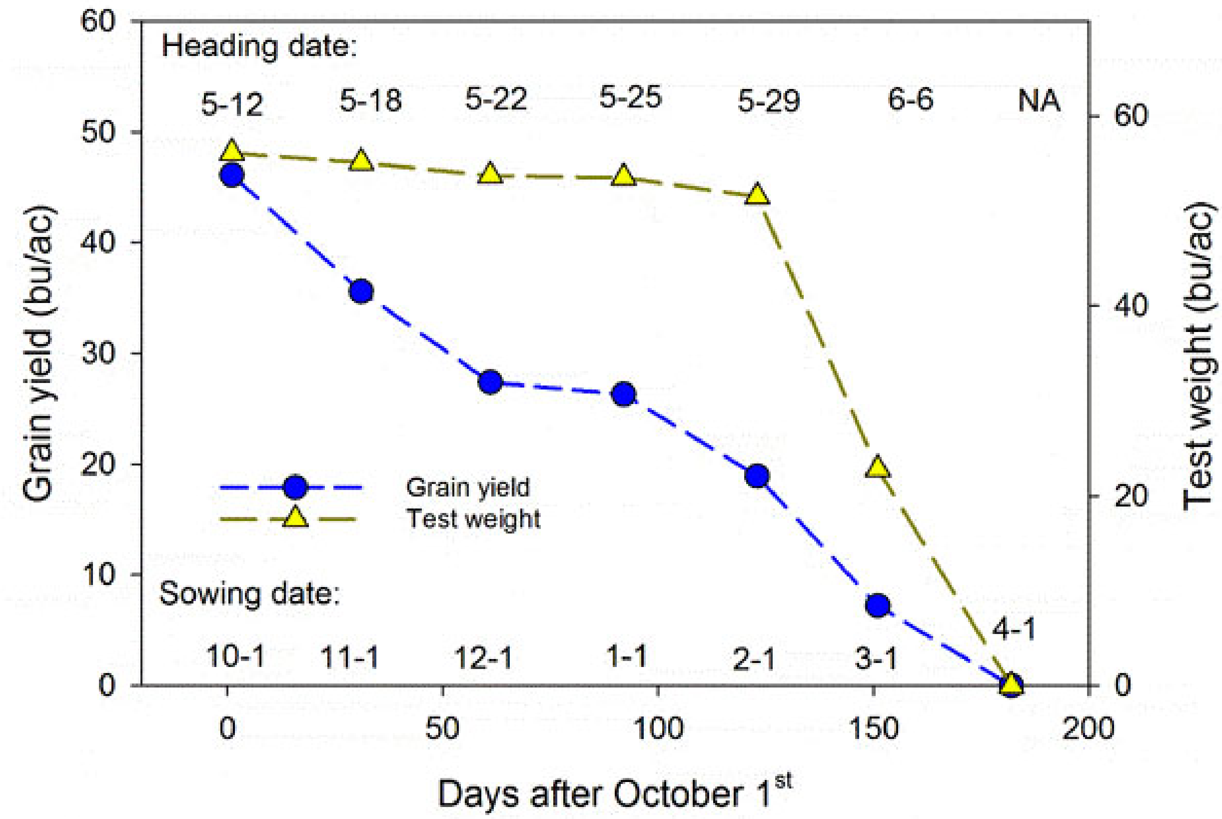


Figure 2. Wheat grain yield, test weight, and heading date responses to sowing date between 1985 and 1991. Data adapted from Kansas Agric. Exp. St. SRL 107.

In summary, the potential consequences of the delayed progress of the Kansas wheat crop during October include greater exposure to winterkill, delayed crop cycle for grain filling under warmer conditions, and a lower yield potential due to decreased fall tillering. Research evaluating effects of weather conditions on long-term variety performance tests indicated that wheat yields were influenced the most by favorable precipitation conditions during the fall that promoted stand establishment and moist soil conditions (Holman et al. 2011). However, if the weather conditions during the remaining season are favorable (mild winter, and cool and moist spring), the crop might still result in decent a yield (Figure 3).

Figure 3. K-State wheat demonstration plot near Dodge City, KS, during June 2017. While this crop was sown normally during October 2016, it had not emerged in the fall due to extremely dry conditions. An ice storm on January 2017 sufficed for the crop to emerge, and favorable winter and spring weather conditions led to a decent yield potential despite harsh initial conditions.

Holman, J.D., A.J. Schlegel, C.R. Thompson, and J.E. Lingenfelser. 2011. Influence of Precipitation, Temperature, and 56 Years on Winter Wheat Yields in Western Kansas. Crop Management 10(1), available at: https://dl.sciencesocieties.org/publications/cm/abstracts/10/1/2011-1229-01-RS

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3. Factors involved in winter survival of canola in Kansas

The question of whether or not the canola crop is going to survive the current stretch of bitterly cold temperatures is one worth asking. Considering temperatures haven't been this cold across the state since the late 1980s, we have entered uncharted territory for the crop. Winter survival of canola in Kansas is a complicated issue. Winter stand losses can be caused by one or more abiotic and biotic stresses including poor plant establishment, low temperatures, the duration of cold temperatures, wind desiccation, dry soils, soil heaving, and damage by diseases and pests. A cultivar's freezing tolerance, its ability to cold harden, and its interaction with the environment ultimately determine whether a crop will survive cold temperatures.

Selecting a winter hardy variety and using good farming practices are the best ways to support improved survival. Canola that possesses 6 to 10 true leaves, 6 to 18 inches of fall growth, a ¼ to ½ inch root diameter, and an extensive root system has reached adequate growth for overwintering. The dormancy period is when winter canola is most tolerant to cold temperatures. During this stage, the rosette should be at the soil surface with no visible stem elongation.

The winter hardening process

In order to survive the winter, canola must go through a hardening process. This begins in the rosette stage in the late fall after several days of near-freezing temperatures (about 35ºF). At these temperatures, plant growth is slowed, resulting in smaller cells with a higher concentration of soluble substances more resistant to frost damage. A few hard freezes (about 26ºF) are beneficial to halt leaf growth and promote hardening. Longer acclimation periods with fewer dramatic swings in temperature are beneficial to hardening and increased freezing tolerance in plants.

Hardened winter canola can endure a certain amount of time with temperatures at or below 0° F. However, extended periods of temperatures at or below 0° F, especially without snow cover, can be detrimental to survival. Frequent diurnal temperature fluctuations above and below freezing were common with temperatures trending warmer than normal in January. Despite having more green leaf tissue than what we typically see at this point of the growing season, the majority of the crop was healthy and hardened off heading into February.

Factors involved in the "un-hardening" of canola

Ultimately, it may not be the cold temperatures per se that cause winter kill but the rapid fluctuations in temperature, which can be a common occurrence in Kansas during the winter. "Un-hardening" of canola is accelerated when temperatures increase to 60ºF or above for an extended period of time (approximately 2 weeks). Un-hardening is a loss of freezing tolerance. However, the effect of fluctuating temperatures and un-hardening during the winter is complicated.

Research conducted by K-State indicates winter warming trends can actually have a positive effect on winter survival in some ways. Green leaf tissue may have increased metabolic activity, rejuvenating the overwintering plants. This partly explains why plants growing in the field can survive colder temperatures than plants acclimated at continuous cold temperatures in a controlled environment. If the warming trend is followed by a gradual cool down and no stem elongation occurs, then plants can re-harden. In addition, as long as low nighttime temperatures accompany warmer daytime temperatures, the rate of un-hardening should be slowed.

Assessing winter canola stands

Depending on how temperatures fare the rest of February, it will be a few weeks before we can fully assess the effects of the recent cold temperatures. After temperatures begin to improve, producers can evaluate their stands for winter kill. When evaluating winter survival, look for green leaf tissue at the center of the rosette or crown. If green leaf tissue is present and the crown is firm when squeezed, it is likely the crop will resume active growth as temperatures rise and day length increases. The root may be examined as well for firmness and vigor. If temperatures warm for several days and the crowns remain limp and fleshy, this could be indication that cold temperature damage has occurred. Remember that the crop can sustain some winter stand loss and still produce an acceptable yield as long as the losses are evenly distributed across the field. Normally, a final winter survival assessment can be made after the danger of further stand loss has passed, which is usually mid-March to early-April in Kansas.

In the picture below, you can see winter canola in a plot near Manhattan, KS. Note the presence of green leaf tissue (Figure 1). If winter temperatures would have been colder up to this point, most of this leaf area would have been lost by this time. We expect this green leaf tissue to be lost after the current cold period and that is acceptable. As long as the center crown and root remain green and firm, the crop has the potential to recover. Some fields will have the benefit of snow cover, which will help to insulate the plants from the bitter cold.

Figure 1. Winter canola nursery near Manhattan, KS on the morning of February 15, 2021. At the time of this picture, overnight low temperatures had been below 0°F for four consecutive nights. A low temperature of -18°F was recorded on the night of February 16. Picture by Mike Stamm, K-State Research and Extension.

Winter hardiness traits in canola cultivars

Winter hardiness is an important trait to consider when selecting a cultivar for any canola cropping system. Differences exist, however, so decisions should be based on results from multiple years and locations.

To increase canola's consistency in the southern Great Plains region, the canola breeding program at K-State continues to select and incorporate winter hardiness traits. Breeding accessions possessing longer vernalization periods are being crossed into the germplasm pool. One theory on improving winter hardiness is that canola can harden more easily after a winter warming trend prior to the vernalization requirement being reached. Therefore, extending the vernalization requirement may allow plants to withstand more variations in temperature during the winter months. The record breaking cold temperatures are some of the coldest to ever impact the breeding program's selection for winter hardiness. The impact on crop development over the next several months will be important to characterize.

New research insights on winter survival

A recent review conducted by a team of researchers from K-State (M. Secchi, PhD student; M. Stamm; and Dr. Ciampitti) in collaboration with other relevant industry partners provided new insights on the role of environmental variables on winter canola survival. The main objective of this study was to improve our understanding of the impact of meteorological factors on survival of winter canola, in addition to providing an assessment of the risks for winter kill. Research data was obtained from the National Winter Canola Variety Trial from 2003 until 2018 (190 site-years) and auxiliary meteorological data over the last 40 years.

Environment was the main factor explaining the variation in winter survival, accounting for 71% of the variation on this variable. Overall winter survival averaged 84%, but a large range of variation across all site-years was present. The main meteorological variables explaining mean winter survival were the number of days with temperatures between 14°F and 5°F, the number of cycles when temperatures fluctuated above or below 32°F, and wind chill temperature during the cold period (winter). Lastly, variety selection is a key factor for improving the probabilities of obtaining better winter survival. This information will be valuable in assessing new growing environments for winter canola and will aid breeding programs in evaluating the impact of environment on selection for this trait.

Summary

Winter survival will depend on the ultimate cold temperature, the duration of those temperatures, and the variety selected. Improving our understanding on the main factors affecting winter survival is critical for canola production. When scouting your canola after this bitterly cold period, check for a green, healthy crown. If you find that, then expect the crop to survive. Re-growth will begin when average daily temperature is 40° F or greater and day length increases in the spring.

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4. Late winter kochia control in fields going to soybeans, sunflowers, and wheat

This is the third and final article in a series discussing pre-emergence herbicides for kochia control. This week we will discuss recommendations specific to fields that will be planted to soybean or sunflower this spring and wheat in the fall. Previous articles have discussed general considerations for late-winter kochia control (https://bit.ly/2MWvSrD - Issue 837) and pre-emergence herbicides for kochia control in fields that will be planted to corn or grain sorghum (https://bit.ly/3tKKZp3 - Issue 838).

Fields going to soybeans

Start in February or early March with a tank-mix of glyphosate (using a minimum of 0.75 lb ae/acre) or Gramoxone SL (minimum of 2 pts/acre) and 8 to 16 oz/acre of Clarity prior to kochia emergence. The use of Clarity requires a minimum accumulation of 1 inch of rain and then 28 days prior to planting soybeans, except in case of Roundup Ready 2 Xtend or XtendFlex soybeans. As indicated by the label, Clarity cannot be used as a pre-plant treatment in soybeans in areas with less than 25 inches of annual rainfall. Paraquat tank-mixed with metribuzin (Dimetric, others) will provide extended residual control of kochia, as long as the population of kochia is susceptible to triazine herbicides. Be aware of rate restrictions for metribuzin in western KS, as soil and environmental characteristics influence the potential for soybean injury following metribuzin.

Sulfentrazone-based products (Spartan, others) could also be considered for use prior to kochia emergence to manage an early flush of kochia (Figures 1 and 2). However, it's important to note the crop rotation restrictions on these products. Pyroxasulfone (Zidua) also has activity on kochia, although more rain is required for activation. Figure 1 illustrates the efficacy of various pre-emergence herbicide programs for controlling glyphosate- and dicamba-resistant kochia in Roundup Ready 2 Xtend soybeans planted in no-till dryland fields at Hays, KS. These treatments were applied to emerged kochia on May 23. All treatments also included Roundup PowerMax.

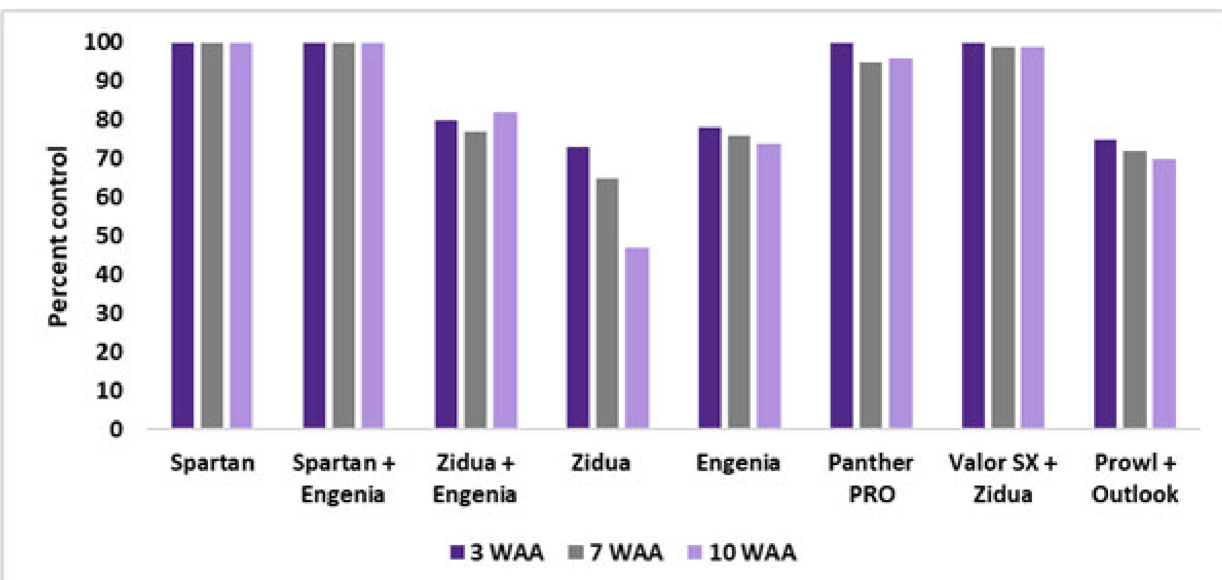

Figure 1. Kochia control following pre-emergence herbicide application in no-till dryland soybean in Hays, KS (WAA= weeks after application). Data collected by Vipan Kumar, K-State Research and Extension.

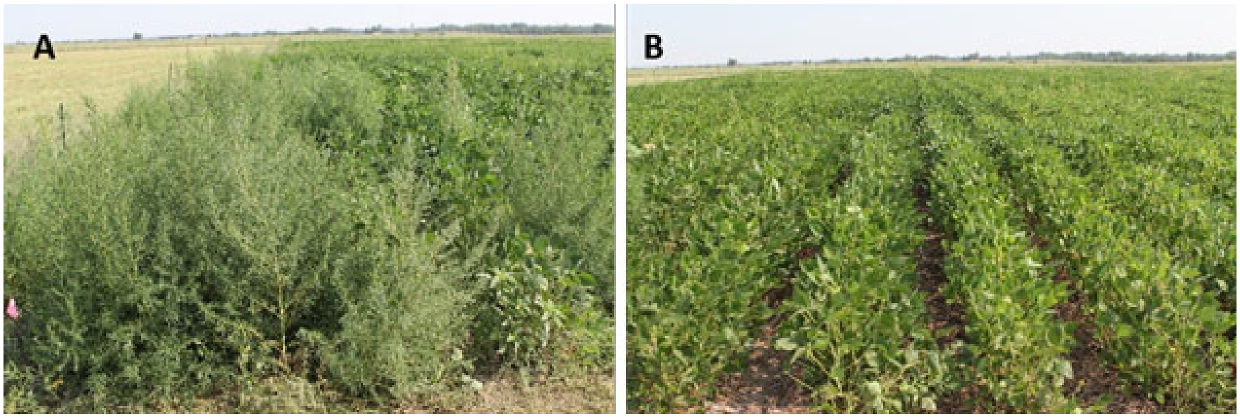

Figure 2. Kochia control in non-treated plot (A) and with PRE applied Spartan (B) in Roundup Ready 2 Xtend soybean at 7 weeks after treatment (WAT). Photos by Vipan Kumar, K-State Research and Extension.

Fields going to sunflowers

Planting sunflowers into a clean seedbed is a key step to achieving good season-long control of all broadleaf and grassy weeds. But, it is especially important for getting good control of any weed populations, such as kochia, that are resistant to glyphosate or ALS-inhibiting herbicides and cannot be controlled with post-emergence herbicides-applied herbicides in sunflower.

The best approach to control ALS/glyphosate-resistant kochia in sunflower is to start in February/early March with a tank-mix of Gramoxone (using a minimum of 2 pts/acre) and Spartan, Spartan Charge (sulfentrazone+Aim), Broadaxe or Authority Elite (sulfentrazone+Dual Magnum), or Authority Supreme/Authority Edge (sulfentrazone+Zidua) before kochia begins to germinate. Select pre-emergence products that are effective on kochia and apply additional pre-emergence herbicides at planting to extend control of kochia and other weeds. Dicamba is not an option in these applications, due to label restrictions. Monitor fields closely as additional Gramoxone SL treatments may be required prior to sunflower planting.

Fields going to fall-planted wheat

If kochia is emerging in fields to be planted to wheat this fall, atrazine cannot be used. Metribuzin can substitute for atrazine and has a 4-month plant-back restriction to wheat. Additional products include Scoparia or Authority MTZ and products containing sulfentrazone or isoxaflutole. Zidua also has good activity but requires significant rainfall for activation, so it should be applied with dicamba.

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5. Soil temperature impacts on western corn rootworm eggs

The recent Arctic-like weather has some people wondering what this means for insects during the upcoming growing season, particularly for the western corn rootworm. *Will this severe cold snap kill eggs that are currently lying dormant in the field?* Before we answer that, it is important to understand a little bit about rootworm egg laying behavior.

Female egg laying occurs over several months, approximately from July to October. The beetles require moist soil for egg laying and will not lay the eggs on the soil surface. Instead, females utilize various cracks and fissures in the field to deposit eggs. How deep into the soil the eggs are laid depends on the depth of the cracks, but most importantly where the moisture is located. Past studies[1,2] have shown eggs can be recovered from as little as a half an inch below the surface of the soil and down to 8 inches or more. However, a majority of eggs are typically found 4 to 6 inches below the soil surface. In some cases, when soil cracks do not form, corn rootworms have been seen to utilize earthworm burrows for egg laying.

In regards to egg survival, temperature has been shown to have an impact. Results from a 1967 study[3] showed that six or more weeks at a temperature between 14°F and -9°F prevented rootworm eggs from hatching. Egg survival significantly decreased in 3 to 6 inches of soil when the ground temperature remained below 18°F[4]. Additionally, a lab study showed that 97% of western corn rootworm eggs held at 14°F for three weeks failed to hatch[5]. In 2004, Ellsbury and Lee examined how sudden, brief cooling of western corn rootworm eggs affected hatchability[6]. Only around 40% of eggs hatched after a sudden hour-long exposure to 10°F. Eggs exposed to sudden temperature drops to .5°F and -7°F failed to hatch. Interestingly, in the same study, they showed that dry conditions did not negatively affect egg hatchability for western corn rootworm. Given these studies, it appears that prolonged low and/or sudden, intense temperature drops can kill eggs.

Given that Kansas has experienced record breaking air temperatures and wind chills this week, what does that mean for our soil temperatures? Using data from Kansas Mesonet, the average high and low air temperatures as well as average high and low soil temperatures at two locations in western Kansas were calculated for the current period of intense cold (Table 1).

Table 1. Average air and soil temperature for period between February 11, 2021 and February 17, 2021 at two locations in western Kansas during intense arctic weather. Note that snow, grass cover thickness, and soil type greatly influence soil temperatures. Data from Kansas Mesonet.

	Average Air Temperature (F)		**Average Soil Temperature (F)**			
	High	Low	2" High	2" Low	4" High	4" Low
Garden City	11.5	-6.2	25.6	17.3	25.4	19.4
Colby	7.2	-9.7	26.8	23.7	27.1	24.9

Actual air temperatures, coupled with their sudden arrival at these locations, appear to be within the range of those temperatures that negatively affect rootworm egg hatchability. However, average soil temperatures at these locations (up to the writing of this article) are not as harsh as the air temperatures and had a much more gradual decrease over the time examined. The upcoming warming trend will also serve to bring soil temperatures back up. It is possible that rootworm eggs laid very shallowly or those that have become unprotected will not hatch in the spring, but eggs deeper below the soil surface are much more protected from the extreme cold temperatures in Kansas over the last few days.

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[5]Gustin RD (1983) Diabortica longicornis barberi (Coleoptera: Chrysomelidae): Cold hardiness of eggs. *Environmental Entomology* 12:633-634

[6]Ellsbury, M.M. and Lee, R.E., Jr (2004), Supercooling and cold-hardiness in eggs of western and northern corn rootworms. *Entomologia Experimentalis et Applicata*, 111: 159-163.

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6. 2020 Kansas Performance Tests with soybean varieties report

The *2020 Kansas Performance Tests with Soybean Varieties* report is now available. In this report, you will find a recap of the 2020 soybean crop, with a detailed discussion summarizing the statewide growing conditions. More importantly, the results of the 2020 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 2020 soybean season had an overall favorable weather pattern for the state. Planting progress was normal for soybeans, promoting good conditions for early-season uniformity of the crop. Even stands can set the crop to a successful growing 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 2020 Kansas soybean performance tests can be found at: https://bookstore.ksre.ksu.edu/pubs/SRP1160.pdf. Hard copies can also be ordered from the KSRE Bookstore.

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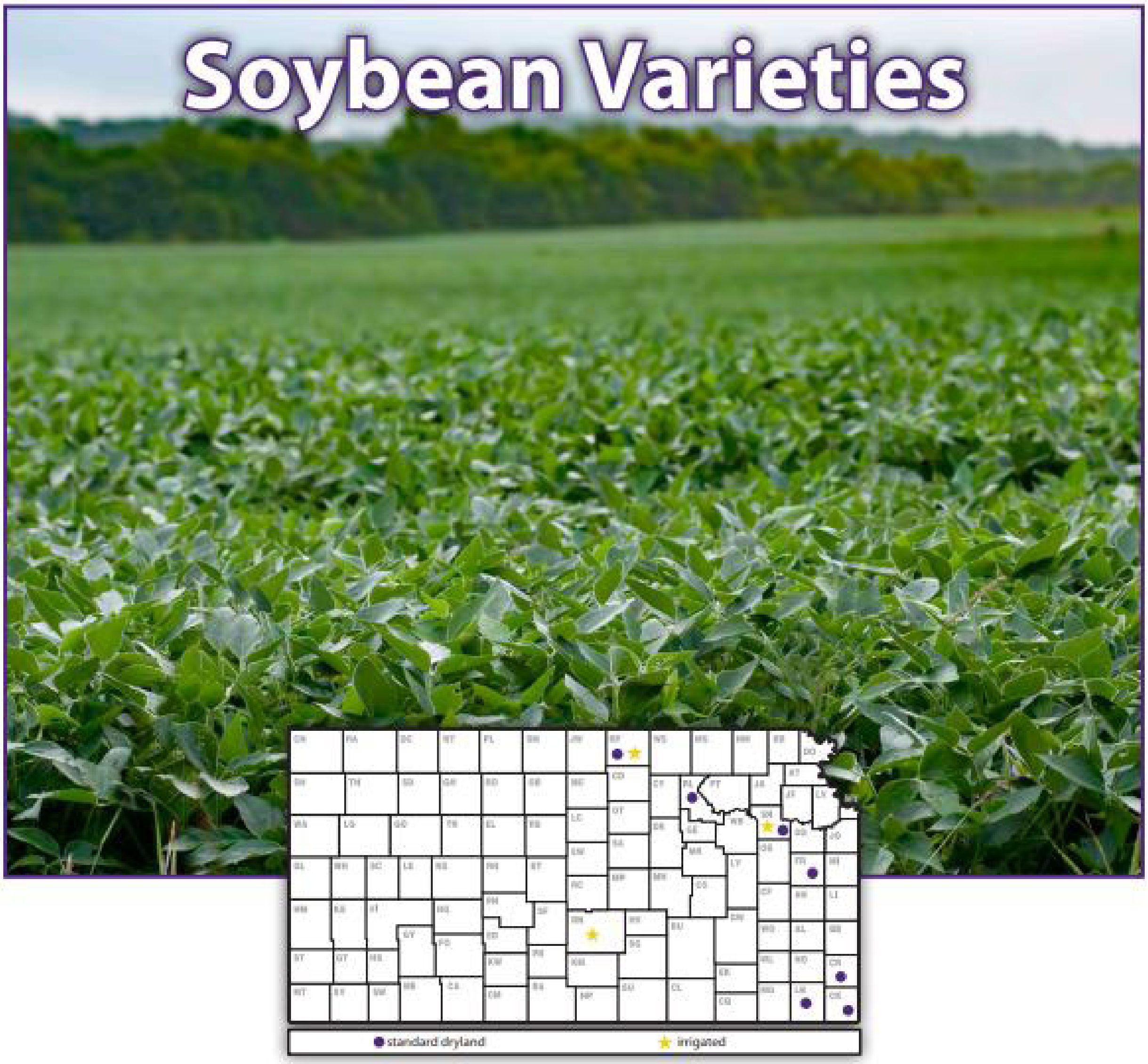
2020 Kansas Performance Tests with Soybean Varieties



Report of Progress 1160

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7. Herbicide application practices in Kansas

Herbicide application practices such as sprayer speed and spray volume influence weed control as well as whole-farm efficiency. Weed science graduate students are currently investigating some of these interactions and we want the research results to have maximum value for Kansas farmers. achieve that goal, **we need your input**!

Please consider filling out a short survey on herbicide application practices. The survey can be accessed by clicking this link or copying the following address into your web browser: https://kstate.qualtrics.com/jfe/form/SV_6myk7ed81Zdi5kF.

We anticipate it will take about 10 minutes to complete on your computer or mobile device. There are approximately 20 questions and your responses will be completely anonymous.

If you have questions or would like a paper copy of the survey questions, please contact Sarah Lancaster at slancaster@ksu.edu

Thank you from the K-State Weed Science Extension Team!

8. Soybean seedling diseases webinar series to begin on Feb. 23

Soybean planting is around the corner and the best time to protect against seedling diseases is prior to planting! The Crop Protection Network, through the Southern Region IPM Center, is offering a webinar series that will be covering important aspects of soybean seedling diseases research and management, as well as the latest information on fungicide resistance in soybean.

In the past three growing seasons seedling diseases (Fusarium root rot, Phytophthora root rot, Pythium seedling blight, Rhizoctonia seedling blight) caused up to 1.5% yield loss across Kansas. Seedling diseases yield loss can be significant under wet and cold conditions, particularly in poorly drainage soils. Tune in for more information!

Registration for each webinar is required.

- **February 23**, 1 p.m. (CT) Soybean seedling disease research and management update presented by Dr. Martin Chilvers, Associate Professor, Department of Plant, Soil and Microbial Sciences, Michigan State University;
  Registration link: https://zoom.us/webinar/register/WN_EhUWlzz2QdKYyR0PYUYZJg

- **March 16**, 1 p.m. Central time: An Overview on Soybean taproot decline presented by Dr. Paul P. Price (Trey), Assistant Professor, Department of Plant Pathology and Crop Physiology Department, Louisiana State University
  Registration link: https://zoom.us/webinar/register/WN_qvKDjPMsSZyZLAkqBh__8Q

- **April 6**, 1 p.m. Central time: Resistance is Futile: The Latest on Fungicide Resistance in Soybean Pathogens presented by Dr. Carl Bradley, Professor and Extension Specialist, Department of Plant Pathology, University of Kentucky
  Registration link: https://zoom.us/webinar/register/WN_SjQvWrbuS7euGdfU9ICzKA

These webinars are made possible by U.S. soybean farmers funded through the Soy Checkoff. Certified Crop Advisor continuing education credits will be available for each webinar.

Rodrigo Borba Onofre, Postdoctoral Research & Extension Fellow
onofre@ksu.edu

9. Great Plains Cotton Conference, February 23 & 24

Following a very successful meeting in 2020, the 2021 Great Plains Cotton Conference is scheduled for **February 23 and 24, 2021**. Due to COVID restrictions, the meeting will be held virtually using the Zoom platform this year. Presentations will be focused on all things cotton, including stand establishment, early season management, pest and nutrient management, varieties, harvest-aids, post-harvest management, economics, and cotton industry updates related to the Great Plains. Nationally recognized speakers from OK, KS, TX, and TN will be presenting. Seed companies will be presenting on their latest varieties and traits as well. One KDA CEU credit will be offered. CCA credits have been requested but not confirmed.

Sponsors for this event include Bayer Crop Science, BASF, Americot/NexGen, Phytogen Cotton Seed, Plains Cotton Cooperation Association (PCCA).

Presentations will go from 7:30 am to 12:00 pm on February 23 **and** 7:30 am to 12:00 pm on February 24. The two-day agenda is outlined below.

February 23

7:30 am **Welcome to the Great Plains Cotton Conference** – Gaylon Morgan, Cotton Incorporated and Gary Feist, Kansas Cotton Association

7:45 **Planting considerations for short-season environments** – Jourdan Bell, Texas A&M, Seth Byrd, OSU, and Stu Duncan, KSU

8:30 **Key cotton growth and development stages** – Tyson Raper, Univ. of Tennessee

8:50 **Prioritizing nutrient inputs to maximize efficiency** – Katie Lewis, Tx A&M and TTU

9:20 Break

9:30 **Sponsors presentation** – BASF and Bayer Crop Science

9:50 **Optimizing water use for Great Plains cotton** – Lucas Haag, KSU; Jason Warren, OSU

10:20 **PGR management in short-season cotton** – Seth Byrd, OSU

10:35 **Boll Weevil program update and Insect pests to watch for**- Rex Friesen

11:10 **Sponsor presentations** – NexGen and Phytogen

11:30 **Q & A**

11:45 **Concluding remarks; continue on February 24th**

February 24

7:30 am **Policy Updates** – Tas Smith, National Cotton Council

8:00 **Cotton Trust Protocol and Cotton Board updates** – Shelley Heinrich, Cotton Board

8:15 **Market Outlook** – John Robinson, TAMU

8:35 **Accuracy of round module harvesters and Minimizing Plastic contamination** – Wes Porter, Univ. of Georgia

9:00 **Weather outlook for Great Plains** – Eric Snodgrass, Nutrien Ag Solutions

9:20 **Weed Management** – Sarah Lancaster, KSU

9:55 Break

10:05 **Sponsors presentations** - PCCA

10:25 **Harvest-aid Management** – Seth Byrd, OSU

10:50 **Q&A**

11:10 **Concluding remarks and feedback**

Interested individuals are asked to RSVP by February 19 to:

- email: Penny Adams at padams@ksu.edu Please provide your name, phone #, email address, address, and Pesticide Applicator Lic. # in the email.

- phone: Shelley Heinrich at 806-670-3250 or sheinrich@cottonboard.org

Registered attendees will receive a Zoom invitation on February 22.

10. Crop Talk webinar series for northwest and north central Kansas

A new series of hour-long webinars began in early February. This series is focused on agronomic topics targeted for northwest and north central Kansas. Topics range from soil fertility, weed management, insect management, and dryland corn dynamics. Continuing education credits have been applied for and will vary based on the subject area of each webinar. Each webinar will begin at 10:30 am (CST) and last until 11:30 am, beginning with the first one on Tuesday, February 2.

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/crop-talk-series.

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.

February 2 - **Soil Fertility Questions from Growers for the 2021 Season (focused for Northwest Kansas)**
Dorivar Ruiz Diaz, K-State Soil Fertility Specialist

(1 Soil Fertility CCA Credit)

February 3 - **Soil Fertility Questions from Growers for the 2021 Season (focused for North Central Kansas)**
Dorivar Ruiz Diaz, K-State Soil Fertility Specialist

(1 Soil Fertility CCA Credit)

February 9 - **Weed Management and that Pesky Palmer Amaranth (focused in Northwest Kansas)**
Sarah Lancaster, K-State Weed Scientist
Vipan Kumar, K-State Weed Scientist

(1 Integrated Pest Mgmt CCA Credit)

February 10 - **Weed Management and that Pesky Palmer Amaranth (focused in North Central**

Kansas)
Sarah Lancaster, K-State Weed Scientist
Vipan Kumar, K-State Weed Scientist

(1 Integrated Pest Mgmt CCA Credit)

February 16 - **Corn Insect Resistance: Rootworm & Western Bean Cutworm**
Julie Peterson, UNL Entomologist

(1 Integrated Pest Mgmt CCA Credit)

February 23 - **Grain Sorghum Weed Control: Start Clean, Stay Clean**
Sarah Lancaster, K-State Weed Scientist

(1 Integrated Pest Mgmt CCA Credit)

February 24 - **Sorghum Insects: Aphids, Headworms and Chinch Bugs.. Oh My!**
J.P. Michaud, K-State Entomologist

(1 Integrated Pest Mgmt CCA Credit)

March 2 - **Alfalfa Management and Weevil Update**
Romulo Lollato - Wheat & Forage Specialist
Anthony Zukoff, K-State Extension Entomology Associate

(1 Crop Mgmt CCA Credit)

March 9 - **Dryland Corn Dynamics**
Lucas Haag, K-State NW Regional Agronomist

(1 Crop Mgmt CCA Credit)