Issue 679

K-STATE
Research and Extension

Extension Agronomy

eUpdate

03/16/2018

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy e-Update 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 Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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eUpdate Table of Contents | 03/16/2018 | Issue 679

1. First hollow stem update: March 14, 2018

Cattle should be removed from wheat pastures when the crop reaches first hollow stem (FHS). Grazing past this stage can severely affect wheat yields (for a full explanation, please refer to eUpdate article "Optimal time to remove cattle from wheat pastures: First hollow stem" in the Feb. 23, 2018 issue).

First hollow stem update

In order to screen for FHS during this important time in the growing season, the K-State Extension Wheat and Forages crew measures FHS on a weekly basis in 28 different commonly grown wheat varieties in Kansas. The varieties are in a September-sown replicated trial at the South Central Experiment Field near Hutchinson.

Ten stems are split open per variety per replication (Figure 1), for a total of 40 stems monitored per variety. The average length of hollow stem is reported for each varieties in Table 1. As of March 14, none of the varieties had yet reached first hollow stem but all varieties had started to elongate the stem.

Figure 1. Ten main wheat stems were split open per replication per variety to estimate first hollow stem for this report, for a total of 40 stems split per variety. Photo by Romulo Lollato, K-State Research and Extension.

Table 1. Length of hollow stem measured Feb. 21, Feb. 28, March 6, and March 14, 2018, of 28 wheat varieties sown mid-September 2017 at the South Central Experiment Field near Hutchinson. The critical FHS length is 1.5 cm (about a half-inch or the diameter of a dime).

Variety	2/21/2018	2/28/2018	3/6/2018	3/14/2018
	---------- Centimeters of hollow stem ----------			
AM Eastwood	0.19	0.28	0.30	0.52
NE10478-1	0.15	0.25	0.24	0.44
LCH13-22	0.16	0.21	0.24	0.40
LCH14-55*	0.17	0.19	0.25	0.42
LCH14-89	0.15	0.22	0.24	0.39
LCS Chrome	0.16	0.20	0.25	0.30
LCS Pistol	0.17	0.22	0.27	0.41
Bentley	0.12	0.22	0.23	0.35
Doublestop CL Plus	0.15	0.21	0.26	0.32
Gallagher	0.18	0.26	0.30	0.50
Iba	0.16	0.20	0.26	0.41
Lonerider	0.15	0.21	0.26	0.41
OK12716	0.15	0.21	0.28	0.35
Ruby Lee	0.13	0.19	0.25	0.46
Smith's Gold	0.18	0.27	0.24	0.48
Spirit Rider	0.19	0.24	0.31	0.47
Stardust	0.18	0.23	0.25	0.43
Paradise	0.19	0.23	0.32	0.43
Bob Dole	0.19	0.25	0.28	0.35
SY Achieve CL2	0.18	0.26	0.25	0.54
SY Benefit	0.18	0.26	0.30	0.52
SY Rugged	0.13	0.23	0.23	0.39
1863	0.21	0.24	0.30	0.63
Joe	0.16	0.21	0.27	0.37
Larry	0.15	0.22	0.25	0.39
Oakley CL	0.14	0.21	0.28	0.37
Tatanka	0.12	0.22	0.24	0.38
Zenda	0.19	0.23	0.28	0.41
Differences among varieties	No	Yes	No	Yes
LSD	-	0.04	-	0.33

None of the varieties had yet reached FHS as of March 14, and hollow stem has been slowly developing since the last measurement. We should notice that this slow development might be a function of below-average temperatures, but also of the extremely dry conditions being experienced at this study location. Most of the wheat varieties tested in a similar setting in Oklahoma have already reached the critical FHS length of 1.5 cm, and would be likely to see more development if temperatures were warmer or if there was more moisture available in the root zone. Nonetheless, we advise producers to closely monitor their wheat pastures at this time.

The intention of this report is to provide producers an update on the progress of FHS development in different wheat varieties. Producers should use this information as a guide, but it is extremely important to monitor FHS from an ungrazed portion of each individual wheat pasture to take the decision of removing cattle from wheat pastures.

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2. Chloride as a topdressing nutrient for wheat

Chloride (Cl) is a highly mobile nutrient in soils and topdressing is typically a good time for application, especially in regions with sufficient precipitation or with coarse-textured soils are prone to leaching.

One of the main benefits from good Cl nutrition is the improvement in overall disease resistance in wheat. Wheat response to Cl is usually expressed in improved color, suppression of fungal diseases, and increased yield. It is difficult to predict whether Cl would significantly increase wheat yields unless there has been a recent soil test analysis for this nutrient. Chloride fertilization based on soil testing is becoming more common in Kansas.

As with nitrate and sulfate, Cl soil testing is recommended using a 0-24 inch profile sample. Based on current data, the probability of a response to Cl in dryland wheat production in northeast and central Kansas seems higher than in western Kansas.

The interpretation of the Cl test and corresponding fertilizer recommendations for wheat are given in the table below. Chloride fertilizer is recommended when the soil test is below 6 ppm, or 45 pounds soil chloride in the 24-inch sample depth. Dry or liquid fertilizer sources are all plant available immediately. Potassium chloride (potash) and ammonium chloride are commonly available and widely used fertilizer products, though other products such as calcium, magnesium, and sodium chloride can also be used and are equal in terms of plant availability.

Table 1. Soil test chloride interpretations for wheat in Kansas

	Soil Chloride in a 0-24 inch sample		**Chloride Recommended**
Category	(lbs/acre)	(ppm)	(lbs Cl/acre)
Low	<30	<4	20
Medium	30-45	4-6	10
High	>45	>6	0

Chloride deficiency symptoms appear as leaf spotting and are referred to as physiological leaf spot (Figure 1).

Figure 1. Upper and lower photos both depict chloride deficiency symptoms (physiological leaf spotting) in wheat. Photos by Dorivar Ruiz Diaz, K-State Research and Extension.

K-State has done considerable research on Cl applications to wheat since the early 1980's, mostly in the eastern half of the state. Results have been varied, but there have been economic yield responses in almost all cases where soil test Cl levels have been less than 30 lbs per acre (Figure 2).

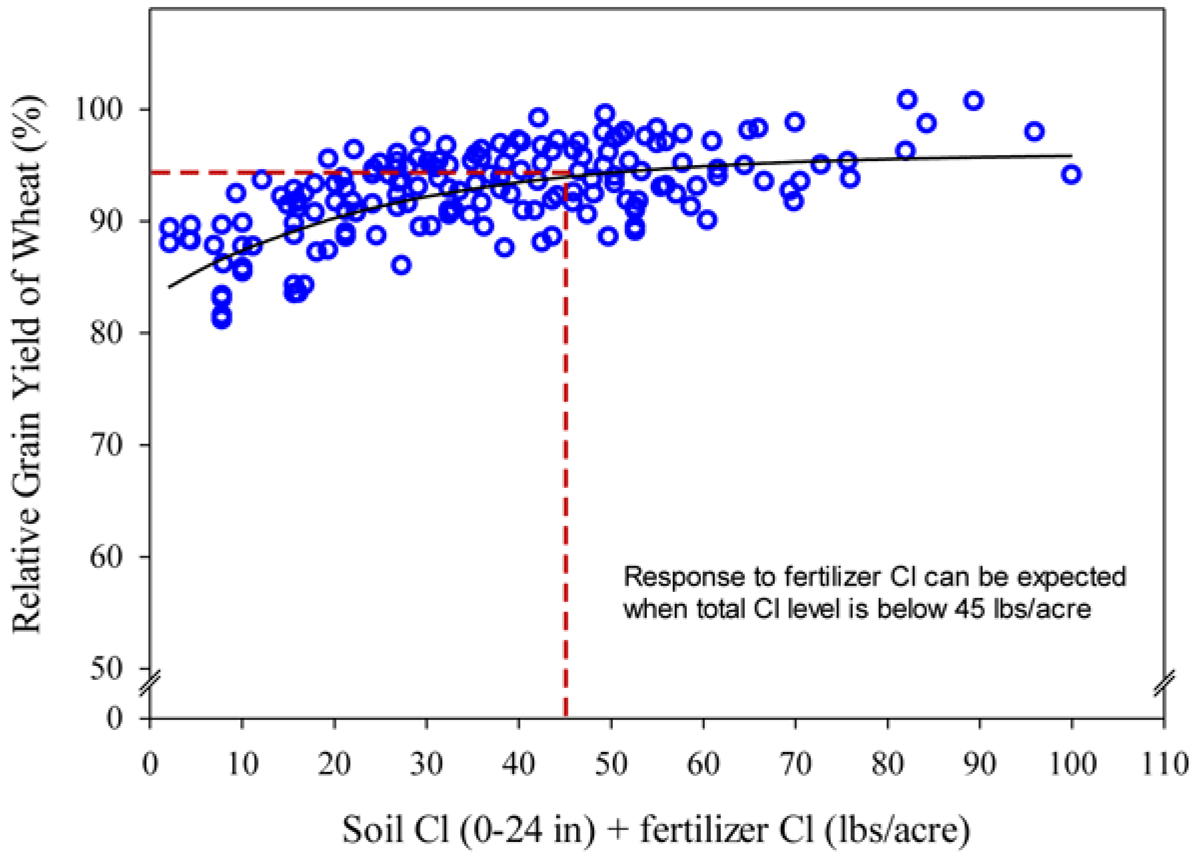

Figure 2. Relative wheat grain yield as affected by total chloride supply (soil + fertilizer) in Kansas.

Deficiencies were most likely to be found on fields with no history of potash (KCl) applications. Recent studies showed that there are variety differences in response to Cl and are likely associated with the tolerance of that variety to fungal diseases.

For more information, see *Chloride in Kansas: Plant, Soil, and Fertilizer Considerations*, MF2570: www.ksre.ksu.edu/bookstore/pubs/MF2570.pdf

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3. Update on soil temperatures in Kansas

In agriculture, selection of the optimal planting date is one of the most critical factors in the decision-making process. When making this decision, producers should consider soil temperatures rather than just calendar dates. After a very warm start to March, air temperatures across Kansas declined this past week.

For the week of March 6-13, average weekly soil temperatures at 4 inches varied greatly among crop reporting districts, overall varying from a decrease of 3 to an increase of 4 degrees F (Figure 1). For example, in the eastern region, soil temperatures decreased by 1-3 degrees F; while in the northwest region, soil temperatures increased by 2 to more than 4 degrees F.

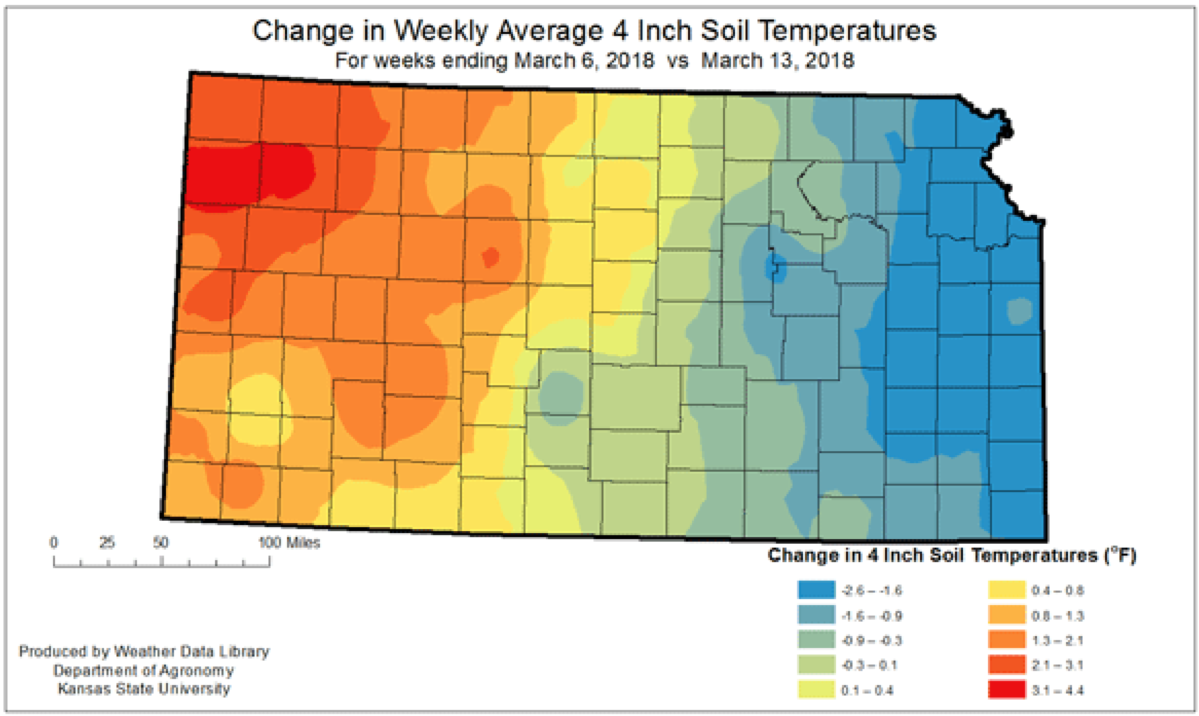

Figure 1. Change in weekly average at 4-inch depth for the week of March 7-13, 2018.

Average weekly soil temperatures at 4 inches varied across Kansas, with temperatures below 40 degrees F in the northwest corner and close to 50 degrees F in the southern portion of the state (Figure 2). For example, in the northeast region, soil temperatures fluctuated between 40 to 44 degrees F.

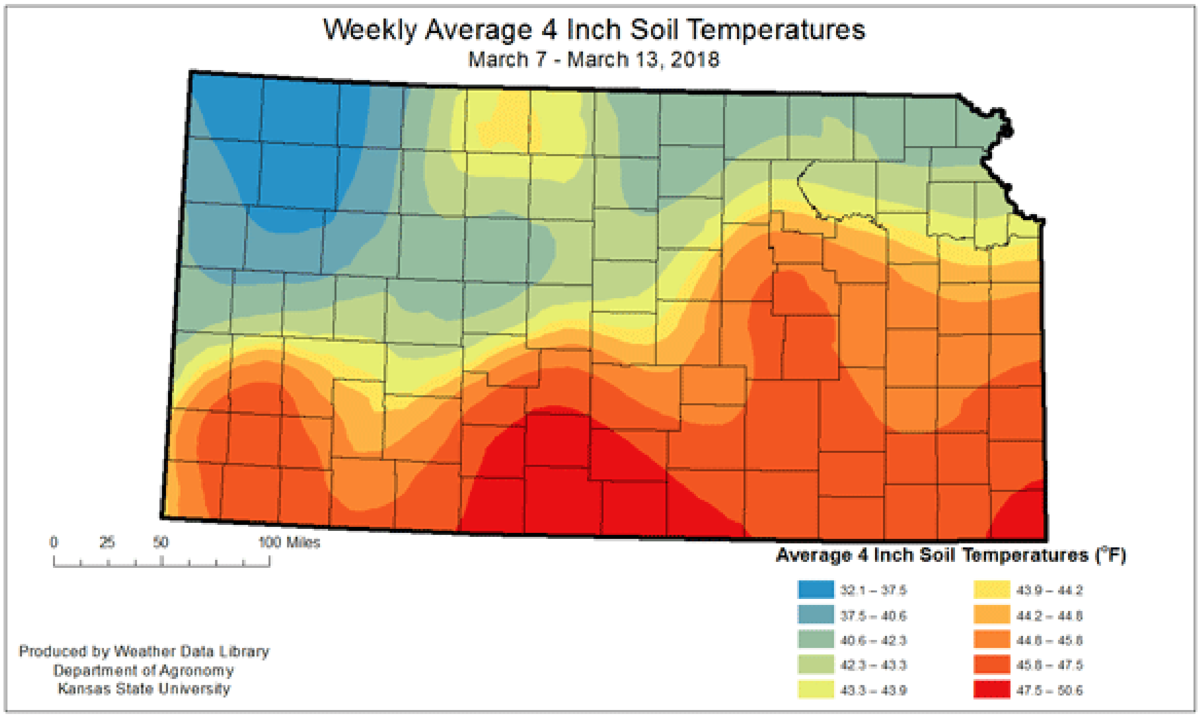

Figure 2. Average soil temperatures at 4-inch depth for the week of March 6-13, 2018.

Lack of precipitation across the state is also influencing the temperature fluctuations experienced in the last week. (Figure 3). Dry conditions will help the soil warm up but planting should be delayed until optimal soil moisture conditions are reached.

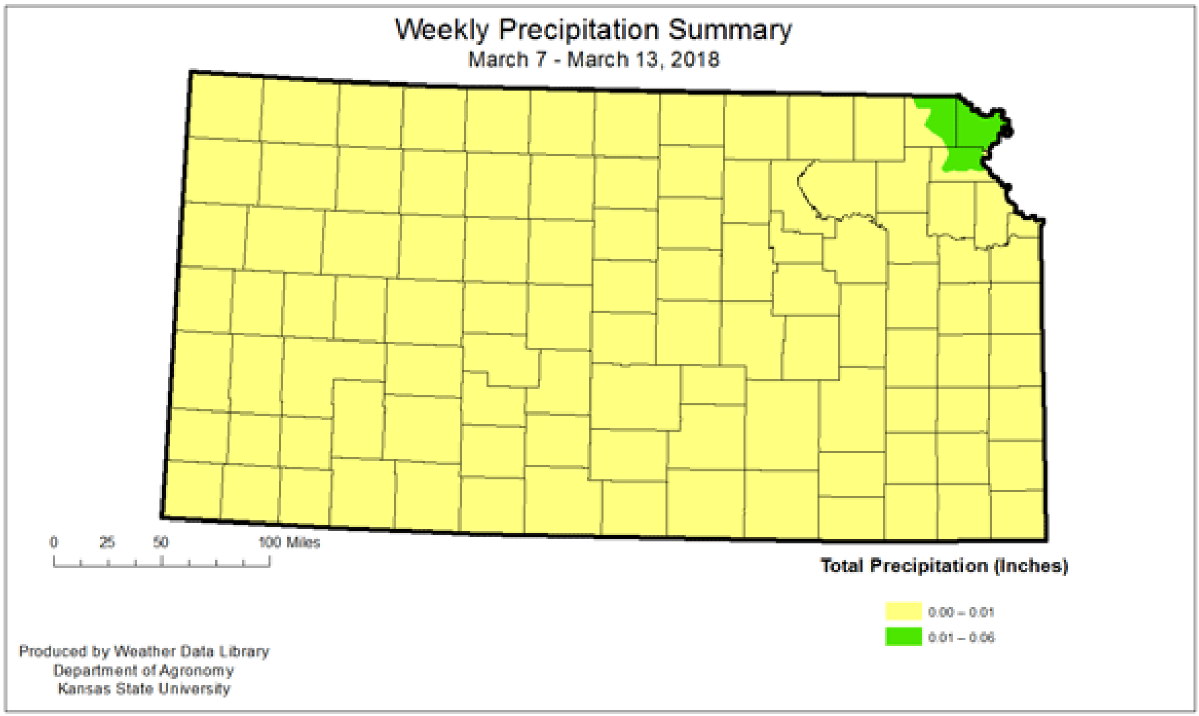

Figure 3. Weekly precipitation summary for the week of March 7-13, 2018.

Each summer row crop has an optimal soil temperature for emergence. The minimum temperature for corn is 50 degrees F for germination and early growth. However, uniformity and synchrony in emergence is primarily achieved when soil temperatures are above 55 degrees F. Uneven soil temperatures around the seed zone can produce non-uniform crop germination and emergence. Lack of uniformity in emergence can greatly impact corn yield potential. This is particularly true for corn, since it is the earliest summer row crop planted. When soil temperatures remain at or below 50 degrees F after planting, the damage to germinating seed can be particularly severe. Corn is also more likely than other summer crops to be affected by a hard freeze after emergence if it is planted too early.

Producers should consider all these factors when deciding on the optimal planting time.

For more information about how we collect temperatures and how to use them, visit our Soil Temperature Explanation page at http://mesonet.k-state.edu/about/soiltemp/data/.

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4. Kansas wheat crop update - March 16

The 2017-18 Kansas wheat crop has been exposed to a wide range of extreme weather conditions since its sowing in the fall of 2017. It started with an extremely moist October where as much as 7 inches of precipitation fell and delayed wheat sowing across the majority of the state, resulting in the slowest sowing pace since 1994 (see more details in the article "Kansas wheat crop progress as of mid-November 2017", eUpdate Issue 662, November 17, 2017). The delayed sowing resulted in a less-developed crop going into the winter which becomes more susceptible to potential winterkill due to less fall tillering and less time to acclimate to cold conditions. Consequently, two very cold events during January caused concern for wheat producers in north central and southwest Kansas (see more details in the article "Possible impacts of the recent cold weather to the Kansas wheat crop", eUpdate Issue 667, January 5, 2018; and "Update on possible impacts of January's cold temperatures to the Kansas wheat crop", eUpdate issue 669, January 19, 2018). Since then, the most widespread concern has been the lack of topsoil moisture, coupled with an underdeveloped rooting system due to a combination of late sowing and dry fall conditions. In this article, we aim to update the current conditions of the Kansas wheat crop in face of all the adversities described above.

Precipitation totals during the growing season

Total precipitation from October 1, 2017 until March 13, 2018, or roughly the winter wheat growing season, ranges from less than one inch in southwest Kansas to more than 12 inches in southeast Kansas (Figure 1). These totals correspond to a departure of -1.5 inches in northwest Kansas to as much as -5 inches in south central Kansas (Figure 1) as compared to the 1981-2010 normal.

However, the bulk of this precipitation occurred during the month of October and the majority of Kansas has had little to no precipitation since then. As a consequence, total precipitation during November 1, 2017, to March 13, 2018, ranges from zero inches, particularly counties in southwest Kansas, to about 6 inches in southeast Kansas (Figure 2). The majority of the wheat growing region received anywhere from zero to no more than 1.66 cumulative inches, which corresponds to departures from the normal ranging between -6.7 to -0.72 inches (Figure 2).

The U.S. Drought Monitor indicates that a greater proportion of the state is under drought conditions as compared to 2012, a year where drought was accentuated and reduced wheat yields across Kansas (Figure 3). Figure 3 also shows a comparison of drought conditions experienced during mid-March 2013 and 2014. Unless spring weather conditions result in above-average precipitation and below-average temperatures, the current drought will likely impact wheat yields from a statewide perspective. For instance, for the years highlighted in Figure 3, USDA-reported state level wheat yields were 42 bu/ac (2012), 38 bu/ac (2013), and 28 bu/ac (2014).

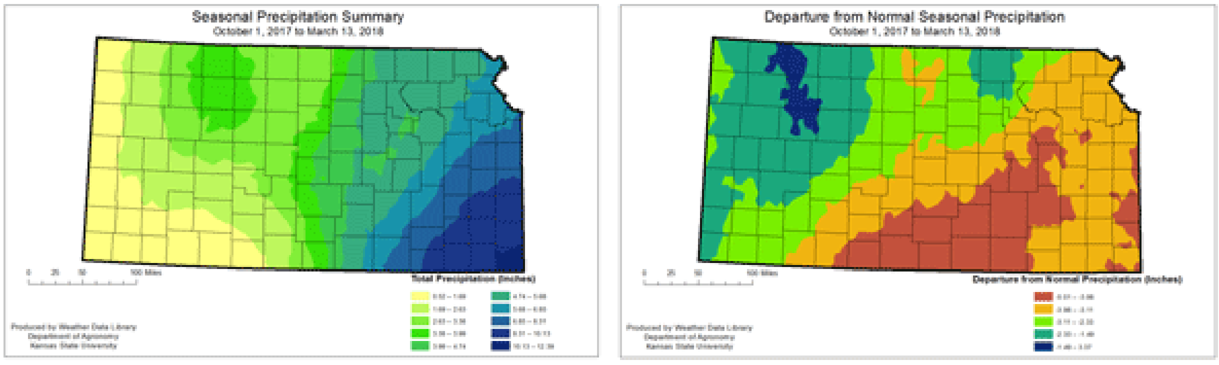


Figure 1. Cumulative (left panel) and departure from the normal (right panel) precipitation from October 1, 2017, to March 13, 2018. Source: Weather Data Library.

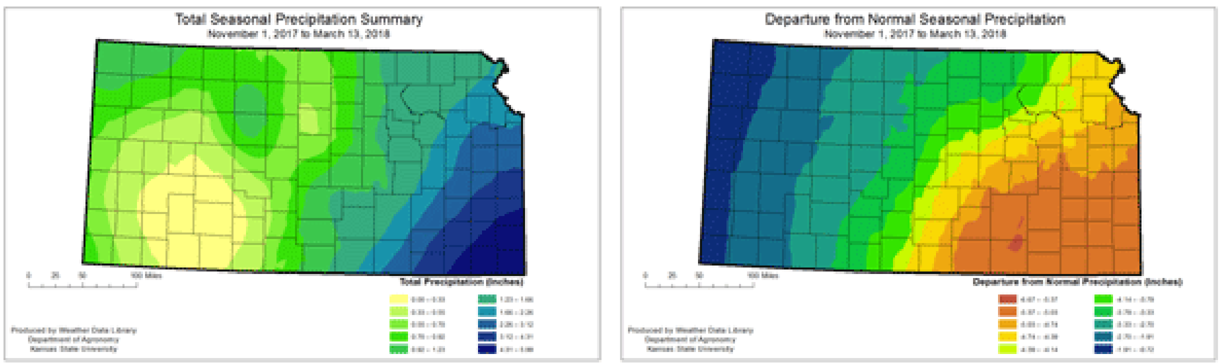


Figure 2. Cumulative (left panel) and departure from the normal (right panel) precipitation from November 1, 2017, to March 13, 2018. Source: Weather Data Library.

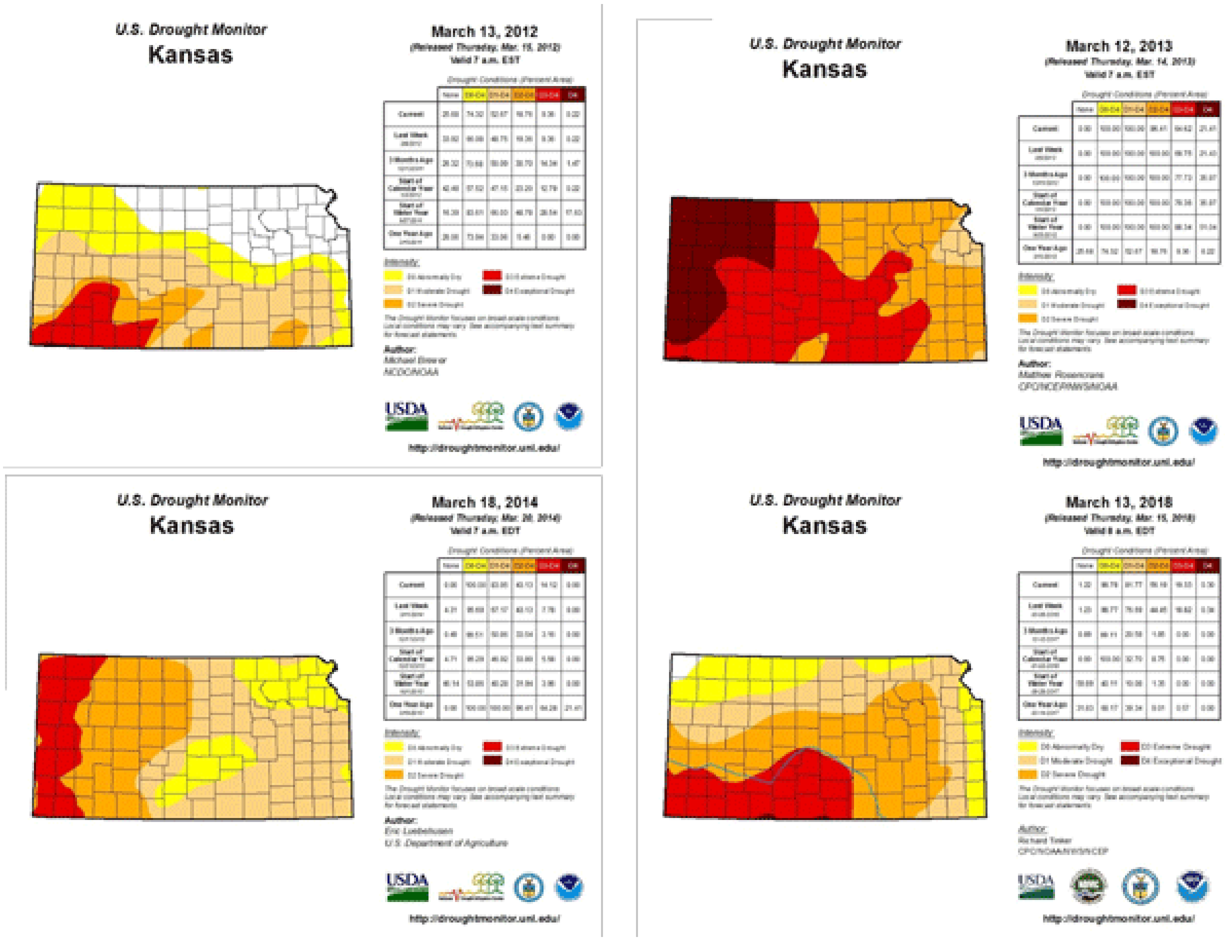


Figure 3. Drought conditions as of March 13, 2012 (upper left panel), March 12, 2013 (upper right panel), March 18, 2014 (lower left panel), and March 13, 2018 (lower right panel). The U.S. Drought Monitor suggests a larger proportion of the state is under extreme, severe, moderate, and abnormally dry conditions. Source: http://droughtmonitor.unl.edu/

Air temperatures

Mean air temperatures during the 2017-18 winter wheat growing season were below the long-term normal for the majority of Kansas both during the fall and the winter (Figure 4). Temperatures have been as much as 9.7 degrees F below-normal during the fall, and 11.3 degrees F below-normal during the winter. Cooler temperatures during the fall decreased canopy and root development. The crop could potentially have benefited from slightly warmer temperatures to enhance tillering, fall canopy closure, and crown root elongation. However, cooler temperatures during the winter have likely been beneficial, especially recently, for slowing the crop development down. In fact, by this time in both the 2015-16 and 2016-17 growing seasons, the majority of the varieties had already reached the first hollow stem stage of development in Hutchinson, while none have reached it yet this season (please see accompanying eUpdate article, "Wheat first hollow stem update: March 14". The reason why cooler-than-average temperatures have likely benefited the crop is that once temperatures increase in the spring, the crop takes on spring growth and increases in biomass, consequently increasing its water demand. Thus, increased water demand in dry soils would result in abortion of older leaves and potentially of older tillers.

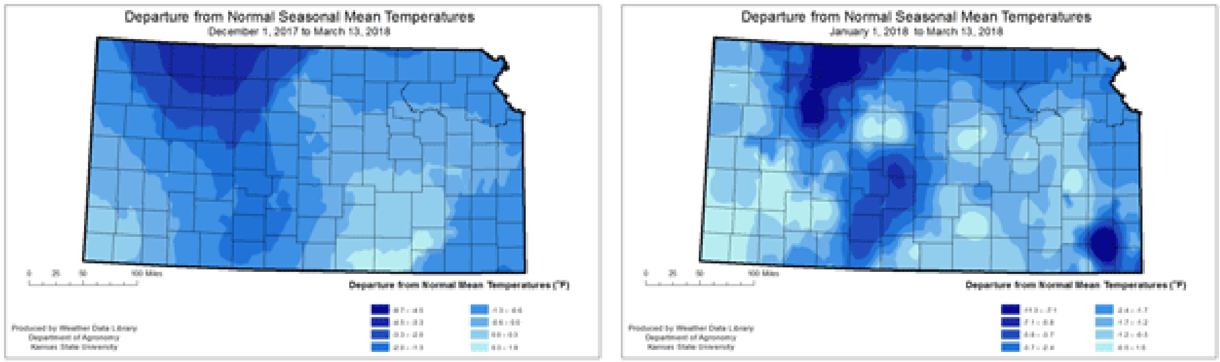
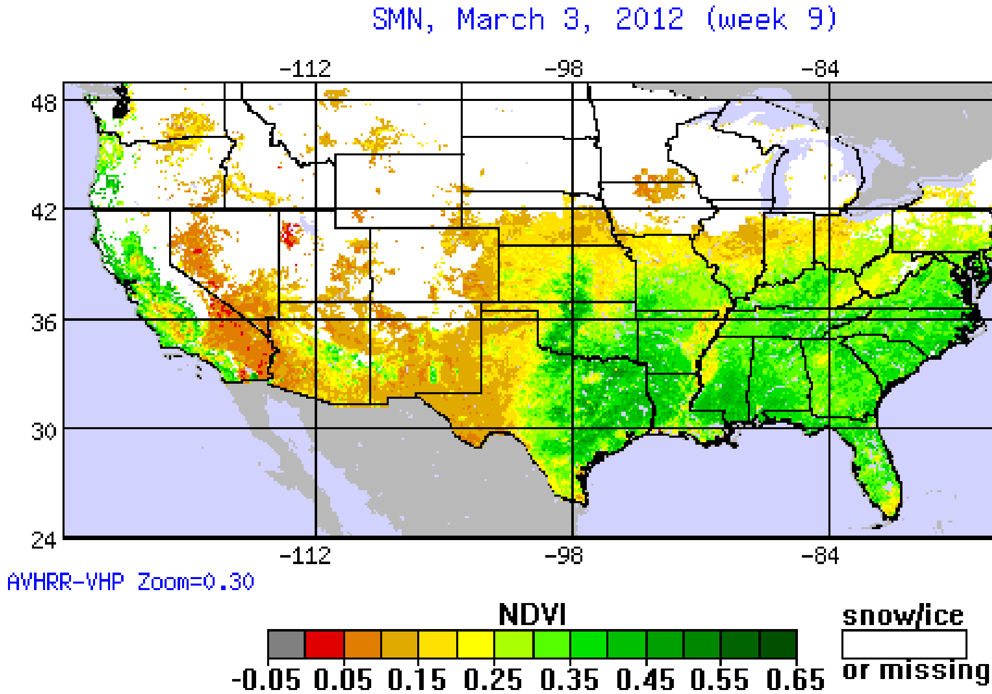


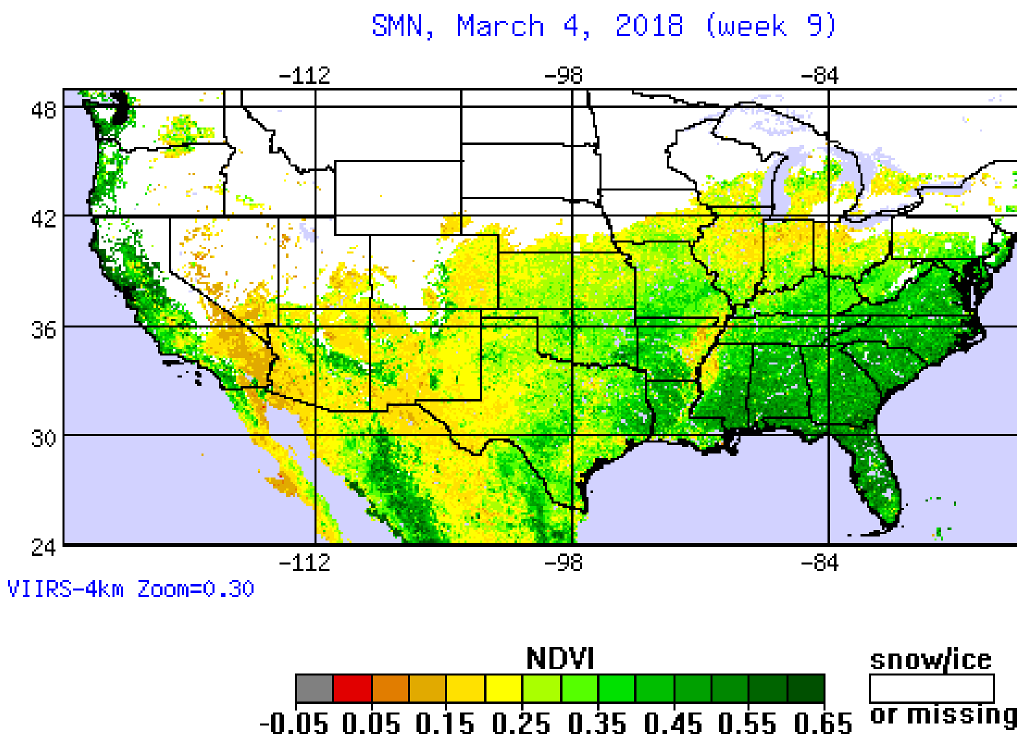
Figure 4. Departure from the normal seasonal mean temperature for the fall (left panel) and winter (right panel) periods during the 2017-18 winter wheat growing season. Source: Weather Data Library.

Crop condition

The majority of the Kansas wheat crop has started to greenup with the increasing day length and temperatures in late February – early March (Figure 5). It is clear from Figure 5 that vegetative conditions this growing season are not as poor as those experienced in the 2012 drought for western Kansas, but that the crop is in the worst condition in the south central portion of the state.

In portions of Kansas where some level of precipitation was received from snowfall or freezing rain events in January and February, the crop is thus far standing in, expecting a rainfall. However, due to high rainfall totals in October followed by extremely dry conditions, the topsoil across the majority of Kansas is extremely dry, however there might still be some subsoil moisture (Figure 6). In many cases, however, due to the cooler-than-average temperatures, the crown roots have not developed enough to reach the subsoil moisture and are several inches away from it.





https://www.star.nesdis.noaa.gov/

Figure 5. Comparison between vegetation conditions (represented as Normalized Difference

Vegetative Index, NDVI) on March 13, 2012 and March 13, 2018.

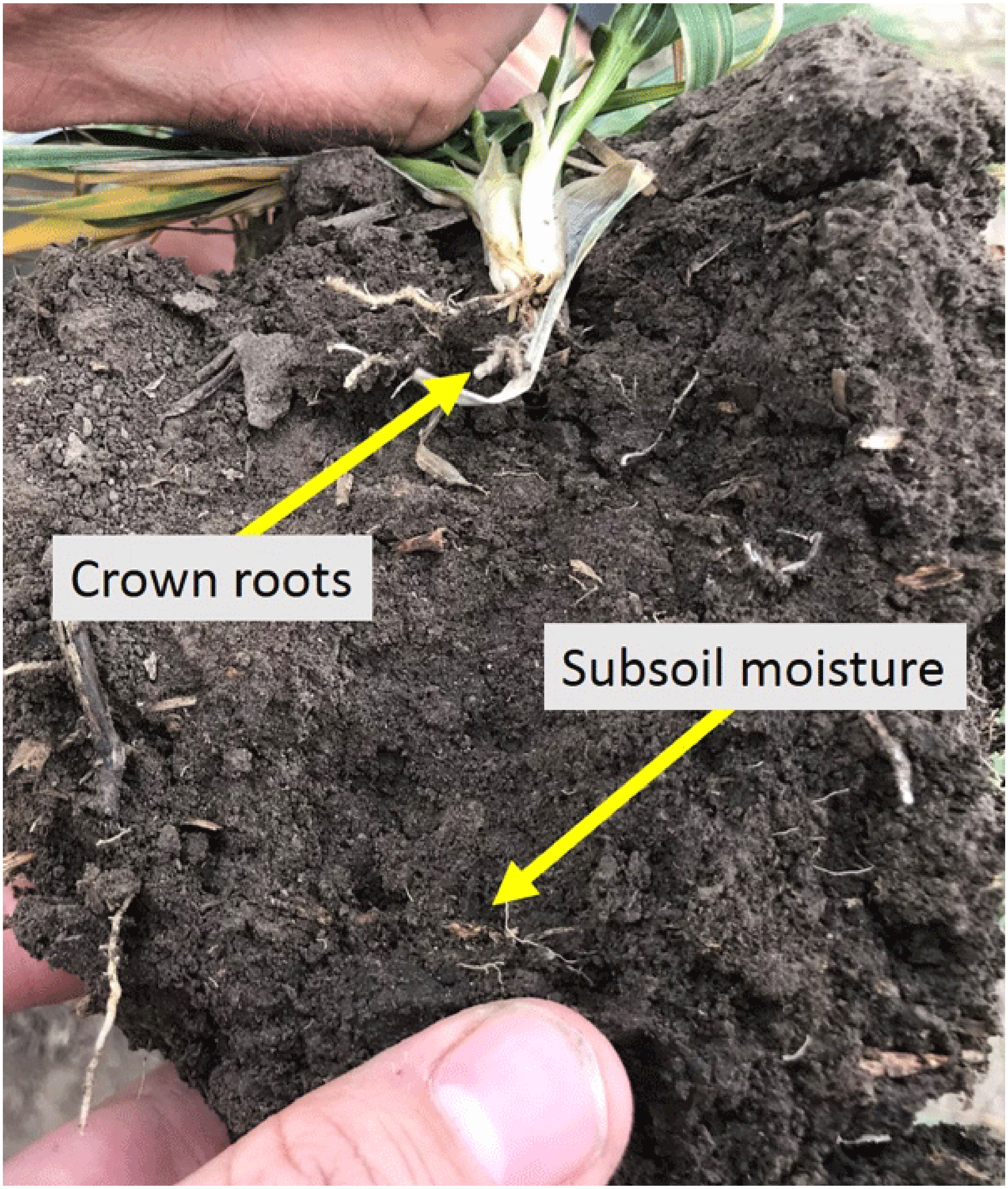


Figure 6. Mismatch between crown root placement (restricted development due to low temperatures and dry topsoil) and subsoil moisture remaining from October precipitation. Photo taken near Wellington, Sumner County, south-central Kansas, late February 2018 by Romulo Lollato, K-State Research and Extension.

The situation depicted in Figure 6 is true for many wheat fields across the state. Another more extreme example from western Kansas is shown in Figure 7, where the crown roots are even less developed and there is a mismatch between the seminal roots and the subsoil moisture.

While the wheat crop in central Kansas is, for the most part, hanging in and waiting for additional moisture, portions of southwest Kansas affected by extremely dry conditions already show the older leaves of the crop drying out (Figure 8) and soon, the older tillers may be aborted if no precipitation is received. It is not uncommon to see fields with little to no green due to drought conditions, or portions of the field that show extreme symptoms of drought stress (Figure 8). The southwest portion of Kansas is the region in which the wheat crop is in the most critical condition and desperately needs rain, especially as the temperatures warm up and crop water demand increases in the spring.

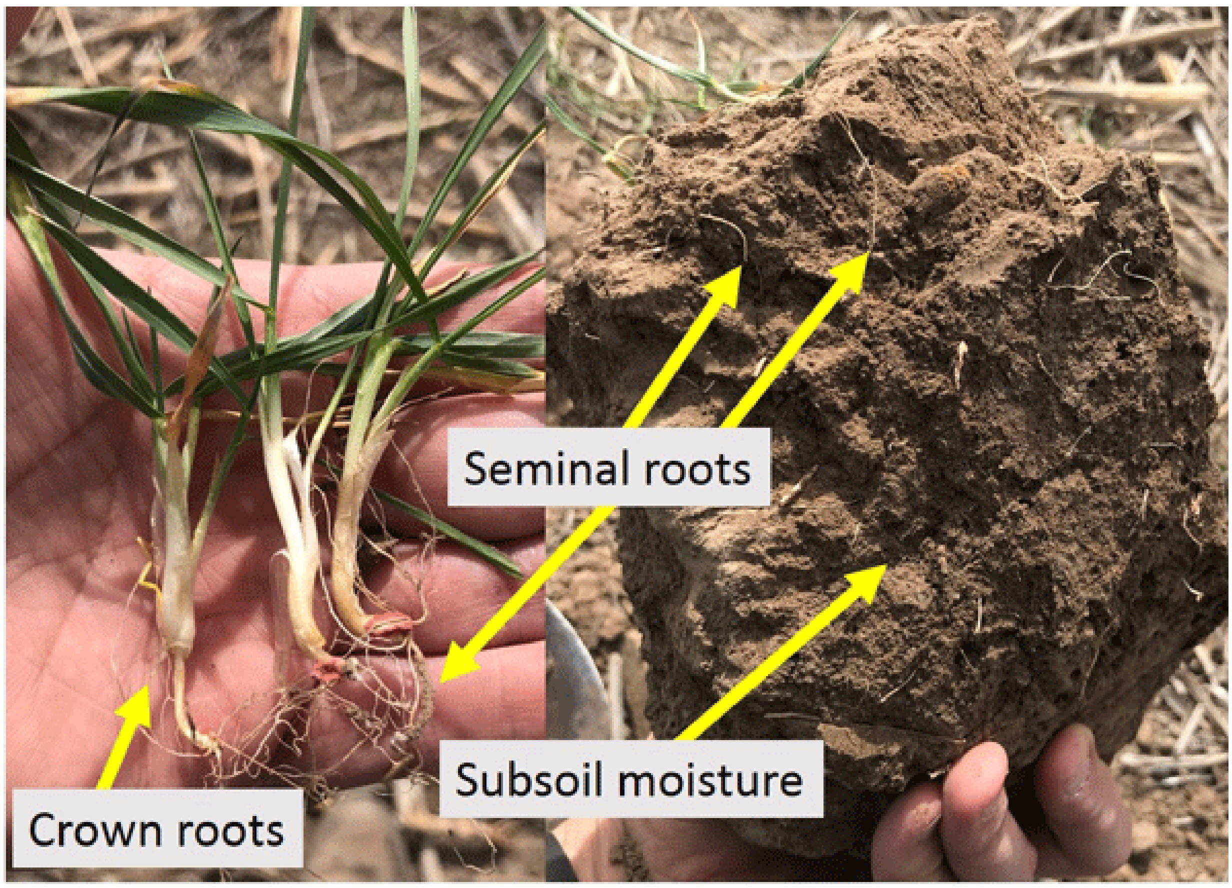


Figure 7. Crown roots undeveloped and a mismatch between seminal roots and subsoil moisture remaining from October precipitation. Photo taken in Wichita County, west-central Kansas, mid-March 2018 by Romulo Lollato, K-State Research and Extension.

Figure 8. Drought stressed wheat in western Kansas. The wheat plants depicted on the left are aborting older leaves due to drought stress, and will soon start to abort older tillers if no precipitation is received. The wheat field depicted on the right shows a typical scenario in southwest Kansas, where little to no crop development is observed and the crop is barely visible. Photo on the left taken by Vance Ehmke in Lane County, KS; photo on the right taken by Romulo Lollato in Wichita County, KS.

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5. Update on drought conditions for Kansas - March 15

Current status

The roller coaster ride of temperatures continues for Kansas. State-wide temperatures averaged 38.7 degrees F (Figure 1) or 2.7 degrees cooler-than-normal for the week ending on March 13th (Figure 2). The Northeastern Division had the largest departure from normal at 4.6 degrees F cooler-than-normal with an average temperature of 35.8 degrees F. The West Central Division had the least departure with an average of 38.9 degrees F, or 0.9 degrees cooler-than-normal. There was a wide swing between the warmest and coldest readings. The Southwest, South Central, and Central divisions all had a diurnal variation – the difference between the warmest and coldest temperatures -- of 65 degrees. The Northeast Division had the least range in temperatures with an average diurnal variation of 52 degrees. The warmest reading in the state was 78 degrees F reported at Hutchinson 4NE, Reno County, on the March 10. The coldest reading in the state was 0 degrees F reported at multiple locations across the state on the 7th and again on the 9th.

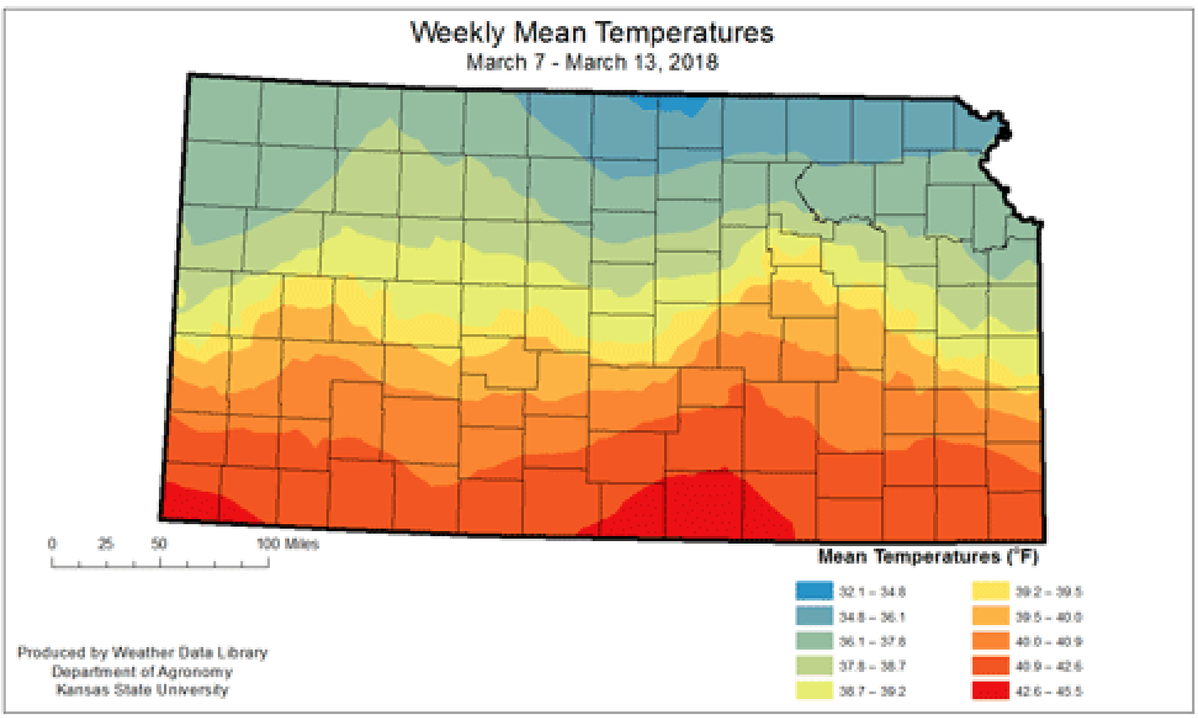

Figure 1. Weekly mean temperatures for Kansas during the week of March 7-13 via Cooperative Observer (COOP) and Kansas Mesonet.

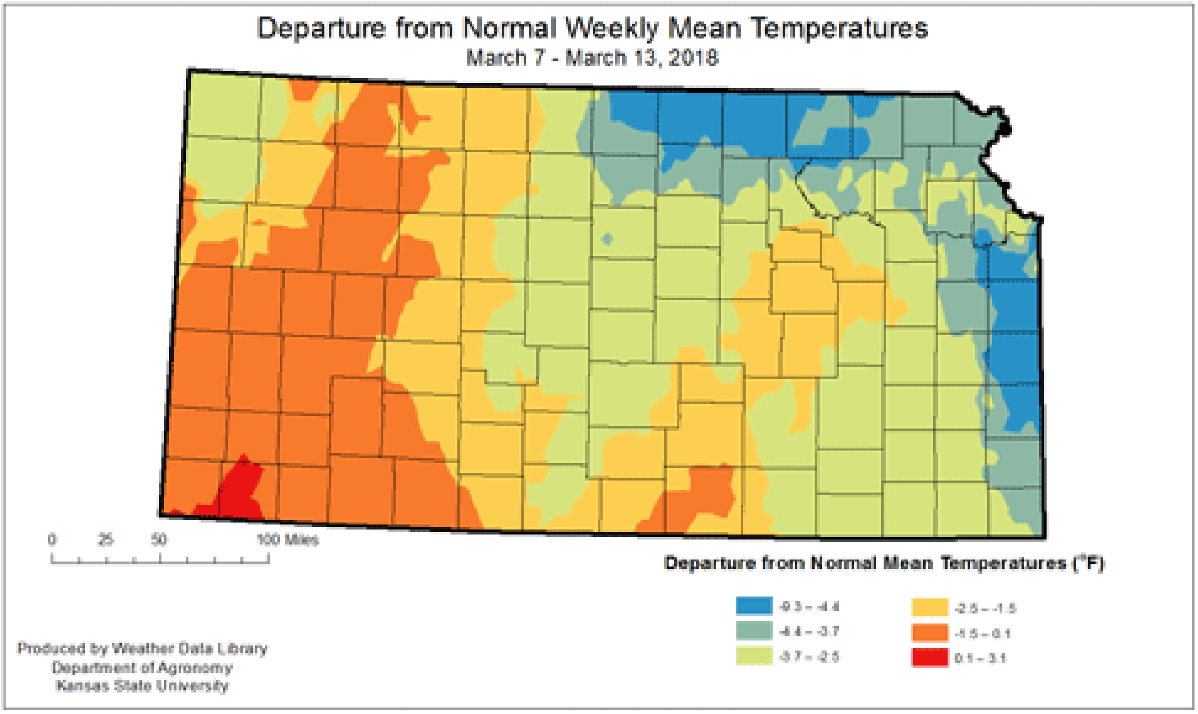

Figure 2. Departure from weekly mean temperatures for Kansas during the week of March 7-13 via Cooperative Observer (COOP) and Kansas Mesonet.

Moisture was almost non-existent. The state-wide average was zero inches, or zero percent of normal. That is 0.45 inches below-normal for the period. No division averaged measurable precipitation. Of the combined monitoring stations: including NWS COOP, CoCoRaHS and Kansas Mesonet stations – a total of 510 stations – only 14 reported measurable precipitation. The greatest weekly total for the National Weather Service Cooperative Stations was 0.02 inches at Cottonwood Falls in Chase County. The highest weekly total at a Community Collaborative Rain Hail and Snow network station was 0.04 inches at Newton 6.5 WNW. For the Kansas Mesonet, the greatest total was 0.06 inches at Hiawatha, in Brown County. There were only trace amounts of snowfall during the week.

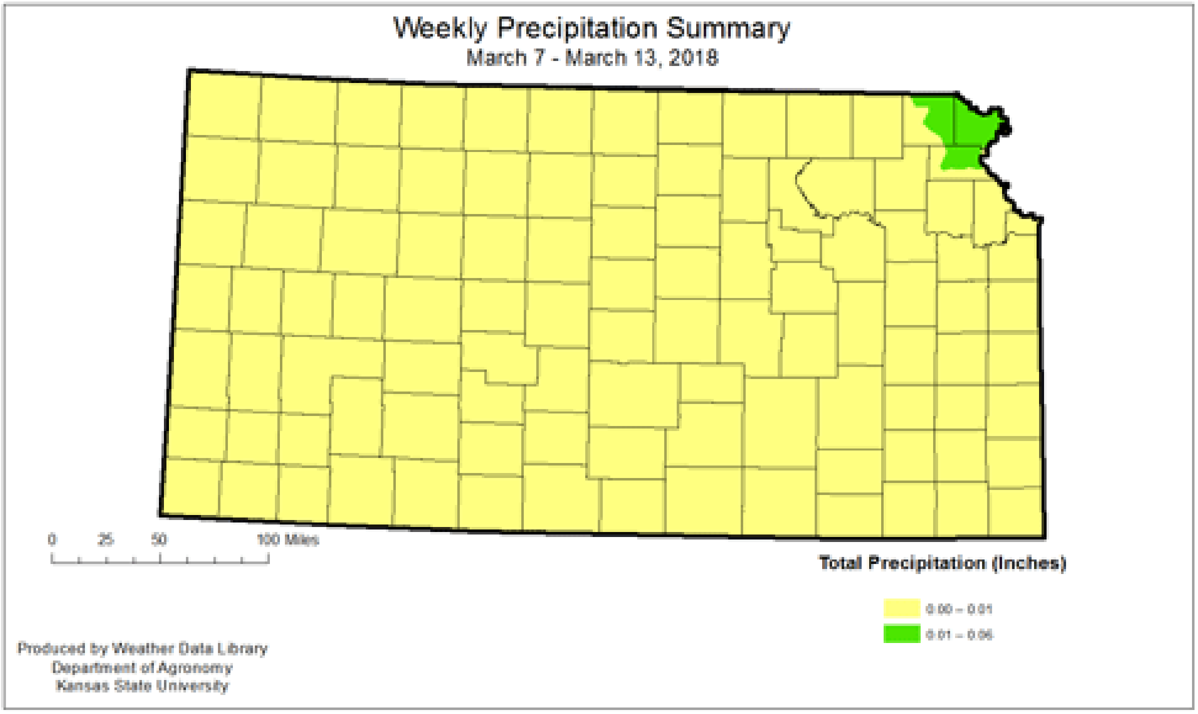

Figure 3. Weekly measured precipitation for Kansas during the week of March 7-13 via Cooperative Observer (COOP) and Kansas Mesonet.

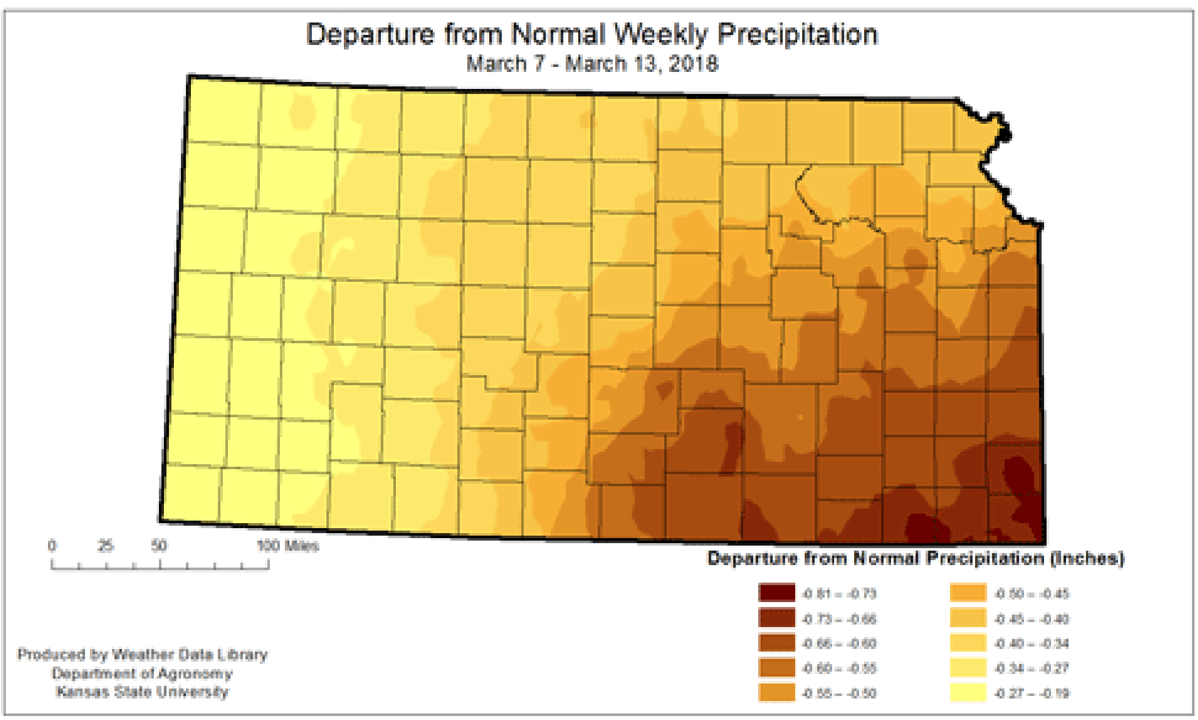

Figure 4. Departure from normal weekly measured precipitation for Kansas during the week of March 7-13 via Cooperative Observer (COOP) and Kansas Mesonet.

Despite the cooler-than-normal temperatures, the continued dry weather resulted in drought expansion across the state (Figure 5). A small corner of northwest Kansas remains drought free (Figure 6). The portion of the state in extreme drought expanded slightly from last week to just over 19 percent, and areas in moderate and severe drought worsened. Exceptional drought remains in the southern parts of the state, expanding north from Oklahoma.

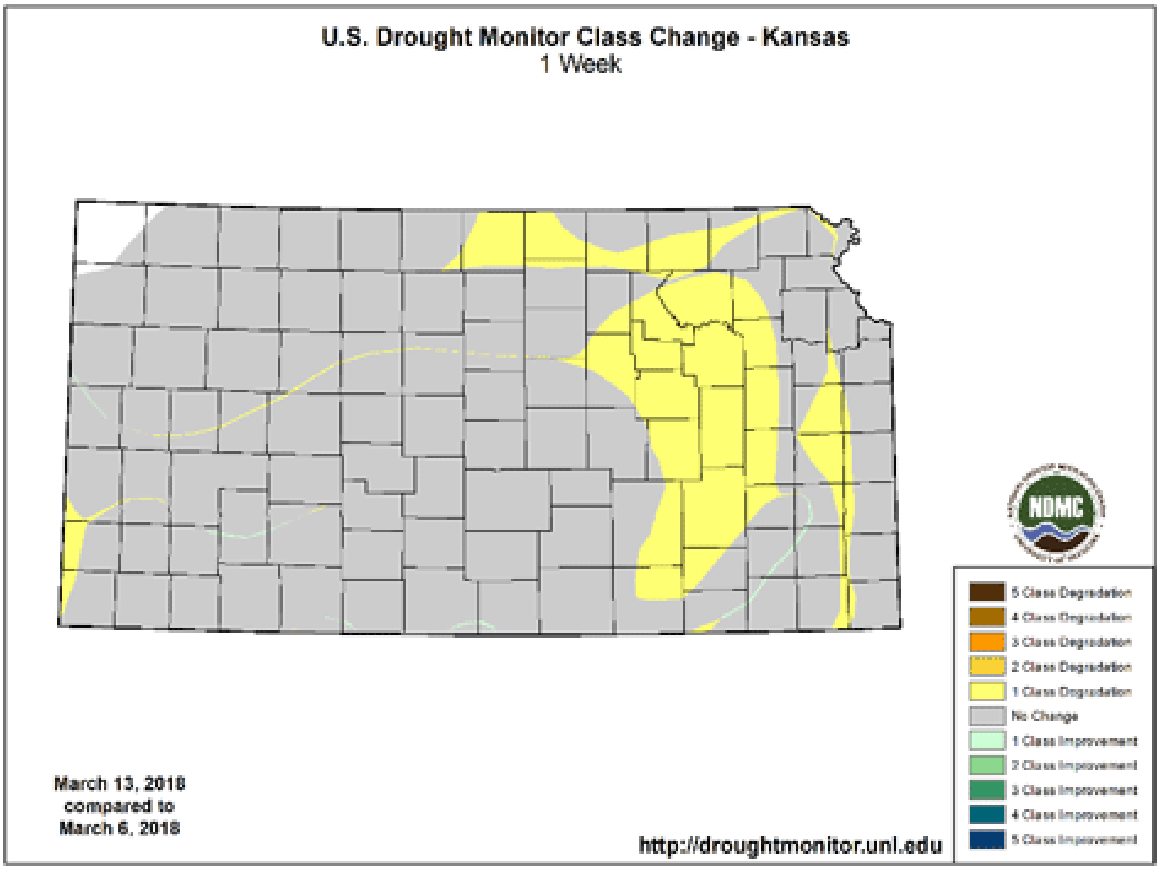

Figure 5. One week change in drought classifications from the Drought Monitor.

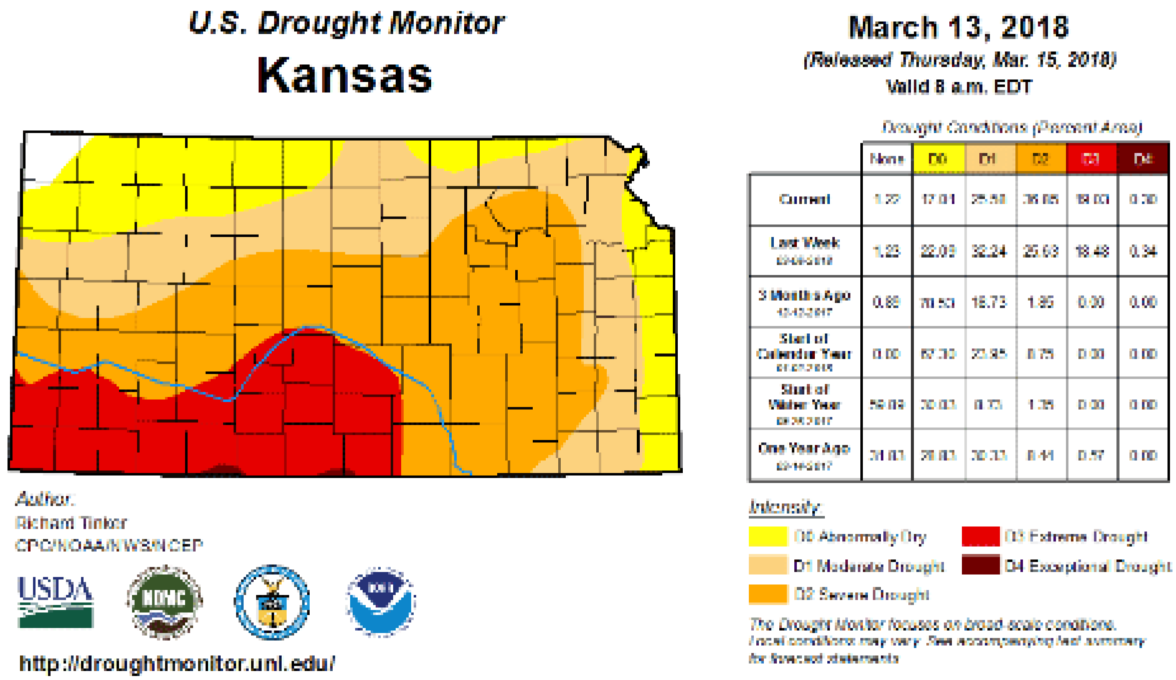

Figure 6. Current drought condition classifications from the Drought Monitor.

The quantitative precipitation forecast for the 7-day period, ending on March 22nd, is not very encouraging. The area with highest expected amounts of precipitation are along the Kansas/Missouri border in the northeast corner. (Figure 7). That region may see up to an inch and a quarter of rainfall. However, amounts drop sharply as you head west and south. From central Kansas to the southwest, the accumulation is expected to be less than a hundredth of an inch. The 8 to 14-day precipitation outlook (Figure 8) indicates a slightly increased chance of above-normal precipitation in the eastern third of the state, but areas that are in extreme drought are likely to see below-average precipitation. The temperature outlook is neutral for all areas except in the southwest, where there is an increased chance of warmer-than-normal temperatures, with the strongest signal in the southern portions of the state.

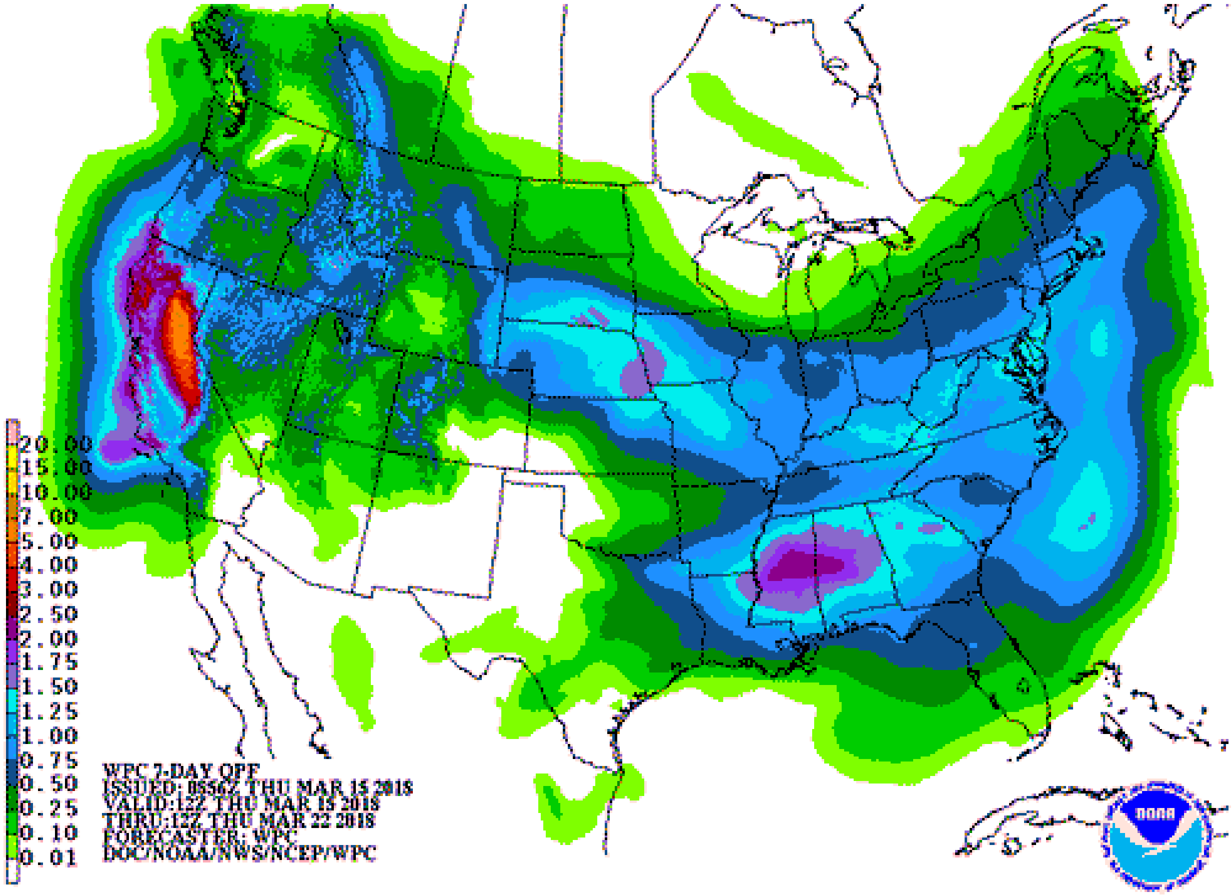

Figure 7. Quantitative precipitation forecast for the week ending on March 22, 2018.

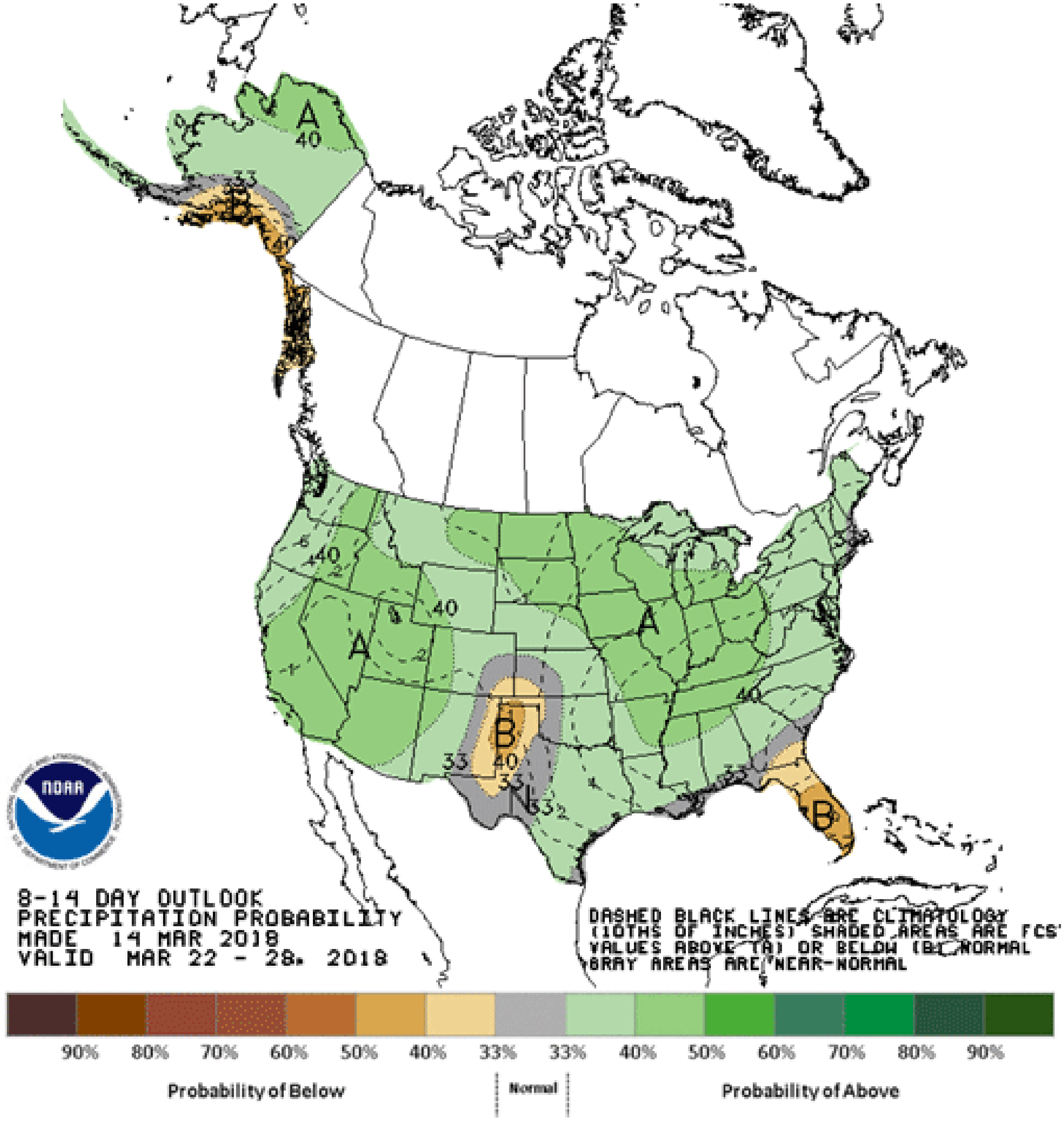

Figure 8. 8-10 day precipitation outlook for period ending March 29, 2018 (CPC).

The April outlook and the 3-month outlook are a little less negative. The April precipitation outlook, as well as the temperature outlook, is neutral with equal chances of above- or below- normal conditions. The April – June outlooks aren't quite as promising (Figure 9). The precipitation outlook for that period is neutral, but the temperature outlook favors warmer-than-normal conditions. Warmer-than normal temperatures would translate to a higher evaporative demand.

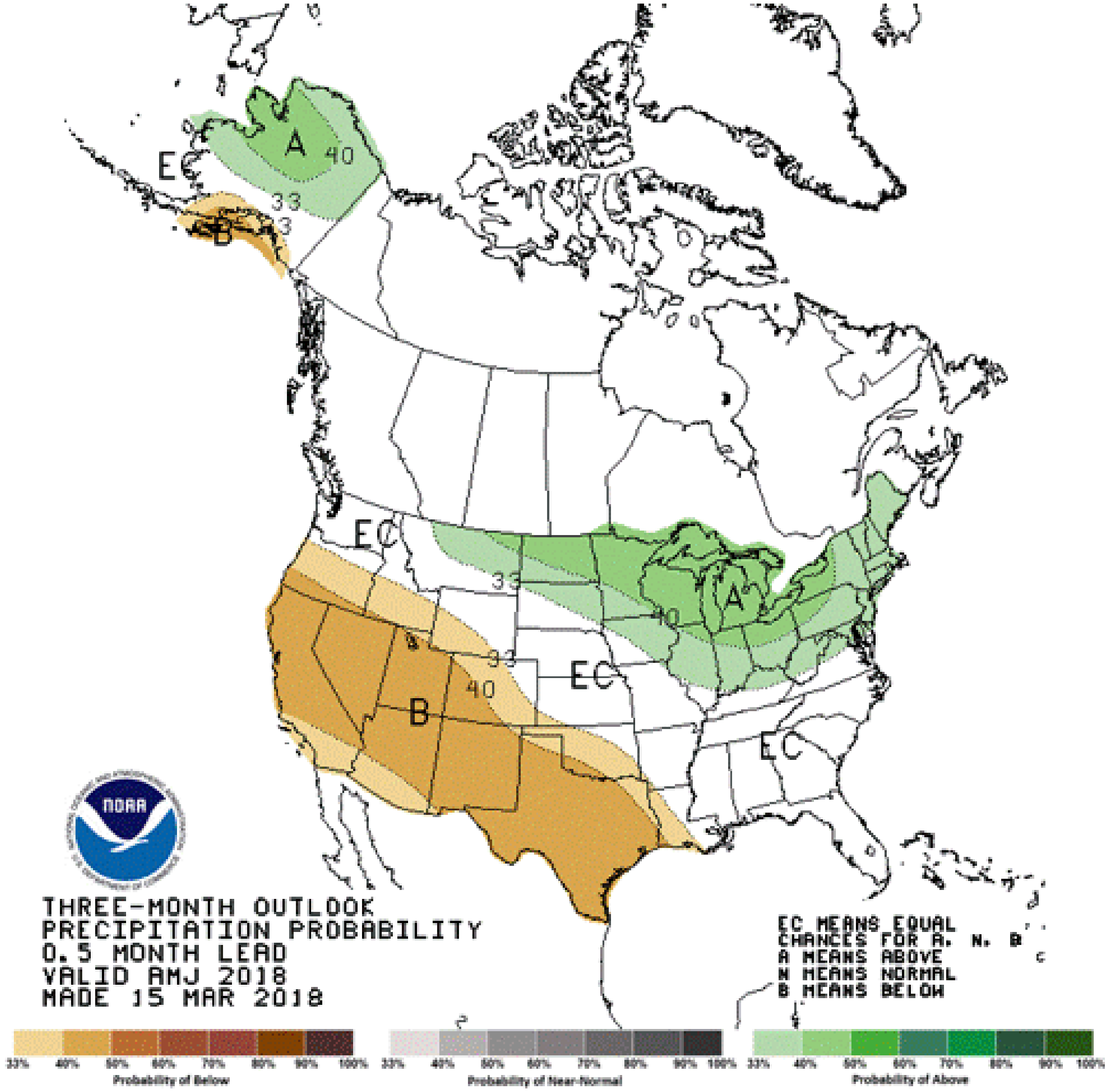

Figure 9. Three month precipitation outlook for period ending June 2018 (CPC).

Drought declaration for Kansas

This week, the Kansas Governor issued a drought declaration for the state. All counties are at least in watch status, with many of the southwest, central and south central counties in emergency status.

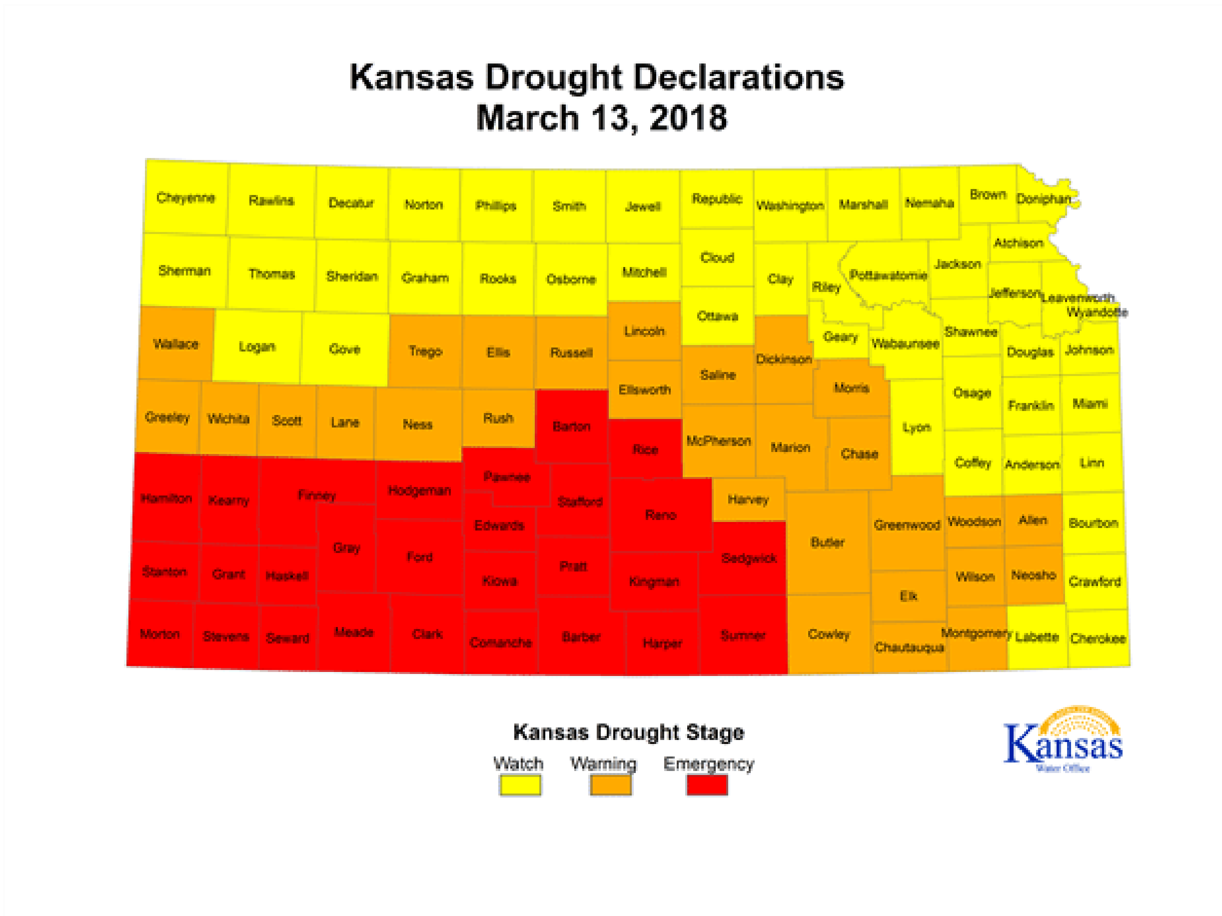

Figure 10. Kansas Drought Declarations (kwo.ks.gov).

Having a Governor declare drought or other state disaster declaration allows for:

- The sharing of some resources
- The waiver of some bid processes (to get materials or services rapidly)
- Certain waivers of service hours (ex: electrical linemen if power lines are down)
- The activation of the National Guard
- Other than Reclamation monies, no other federal funding is triggered with Governor's Declaration

The Kansas Water Office serves as the coordinating agency for drought response. More information on these and other resources and activities can be found on their web page*: www.kwo.ks.gov

**Note: this link is different than the web address you might remember, so please update your bookmarks.*

Kansas Research and Extension also has a wide range of materials available related to drought conditions.

Additional information can be found in the latest Agronomy eUpdate at https://webapp.agron.ksu.edu/agr_social/eu.throck or on the Kansas Climate website under weekly maps or drought reports at http://climate.k-state.edu/maps/weekly and http://climate.k-state.edu/reports/weekly/2018/

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6. 2017 Kansas Summer Annual Forage Hay and Silage Variety Trial results now available

The results of the 2017 Kansas Performance Tests with summer annual forage hay varieties are available online at http://www.agronomy.k-state.edu/services/crop-performance-tests/forages/2017-summer-forages-performance-tests.html. The results are summarized by location and are split into hay and silage categories.

The following paragraphs are excerpts taken from the 2017 Forage Report. The full 2017 Forage Report will soon be available online at http://newprairiepress.org/kaesrr/.

Summer annual forage performance tests are conducted each year by the Kansas Agricultural Experiment Station. 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.

In 2017, summer annual forage variety trials were conducted across Kansas near Garden City, Hays, Mound Valley, and Scandia. All sites evaluated included hay and silage entries. Companies were able to enter varieties into any possible combinations of research sites, so not all sites had all varieties. Across the sites, a total of 61 hay varieties and 66 silage varieties were evaluated.

In general, the 2017 growing season saw below-normal mean temperatures during the first part of August and below-normal growing season precipitation. The exception was Mound Valley, which had above-normal growing season precipitation. Hays and Scandia largely relied on stored soil water for crop growth resulting in little regrowth and no second harvest in those hay tests.

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.

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7. New K-State publication - "Satellite Data and Agronomic Decisions"

A new publication, titled "*Satellite Data and Agronomic Decisions,*" is now available through K-State Research and Extension. This publication is supported by Kansas Corn Commission. The lead author is Ignacio Ciampitti, Crop Production and Cropping Systems specialist at K-State. The publication can be found online at https://www.bookstore.ksre.ksu.edu/pubs/MF3398.pdf

The goal of this publication is to help producers, crop consultants, and agronomists understand how to use satellite imagery to assist with the decision-making process in farming operations. The basic principles of how images of the earth's surface are collected by satellites is discussed (Figure 1), along with the main characteristics of the satellites used for agricultural application. Readers can learn about the importance of resolution (Figure 2) and why resolution is an important consideration when choosing the correct satellite.

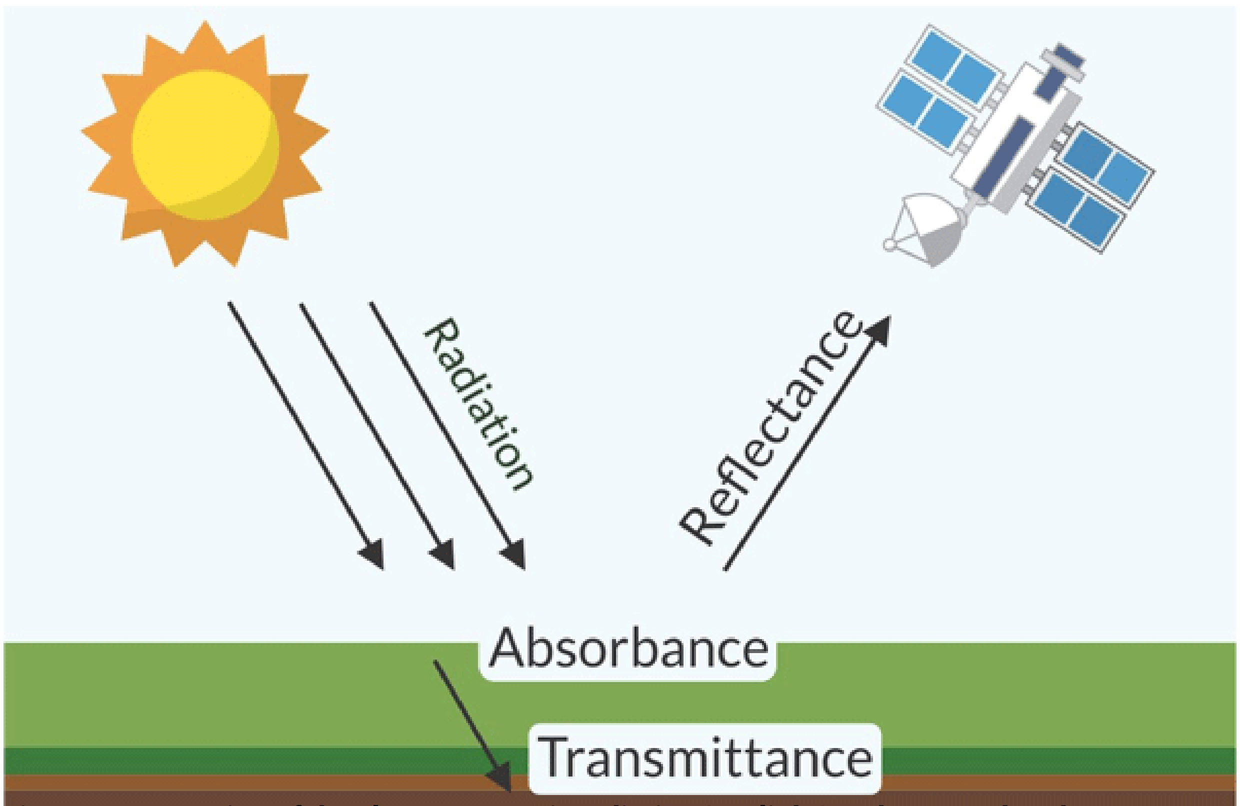

Figure 1. Interaction of the electromagnetic radiation (sunlight) and target: absorbance, transmittance, and reflectance. Infographic developed by Luciana Nieto and Ignacio Ciampitti, K-State Research and Extension.

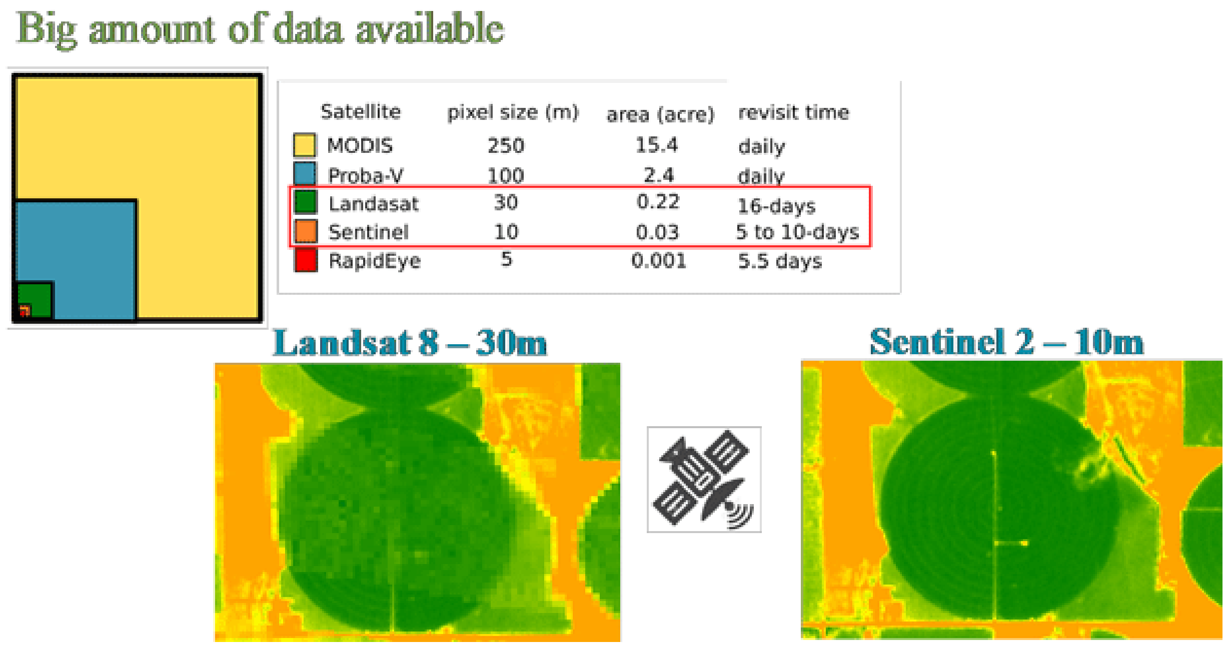

Figure 2. Different satellites and characterization for spatial (pixel size, m), and temporal (revisit time) resolution. Infographic developed by Rai Schwalbert and Ignacio Ciampitti, K-State Research and Extension.

What are some applications of satellite data in agriculture?

- Site-Specific Management (SSM), using prescription maps to vary seeding rate and fertilization, depending on the potential of the environments within the field.
- In-seasonal (within a season) and temporal (across seasons) monitoring of crop vegetation (diagnosis of potential stress factors such as drought, diseases, and insects).
- Forecasting crop yields at different scales: county, district, regional, state, and country level.
- Crop scouting and sampling according to the field dimensions.
- Environmental impact assessment, fires, floods, to track land use and land cover change.

What are we expecting for the future?

- New public satellites allowing a finer time resolution (e.g. Sentinel-3) and avoiding problems with cloud interference.
- Higher spectral resolution satellites that will benefit a more intensive monitoring of functional crop growth parameters (e.g., ESA FLEX mission - planned launch date is 2022).
- More studies to focus on how to integrate information from different satellites while taking advantage of the different features from each one.
- Development of remote sensing end-to-end solutions by agricultural providers for farmers (integration with ground sensors, mobile apps, etc.).

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8. 2017 Census of Agriculture - It's not too late to be counted!

Kansas farmers and ranchers still have time to be counted in the 2017 Census of Agriculture, according to the U.S. Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS). Although the first deadline has passed, NASS will continue to accept Census information through the spring to get a complete and accurate picture of American agriculture that represents all farmers and ranchers.

"We thank everyone who has completed their Census to date. Kansas currently has a return rate of just over 52 percent of the Census questionnaires mailed to producers last December," said Doug Bounds, Kansas State Statistician. "A lot is at stake if producers are not represented in this data. Census data have and will continue to influence important decisions for American agriculture. The data will affect every operation and every farming community at some point, whether it be through farm policy, disaster relief, insurance or loan programs, infrastructure improvements, or agribusiness setup. There is accuracy and strength in numbers, which is why NASS is committed to giving producers every opportunity to respond."

Federal law mandates that everyone who received the 2017 Census of Agriculture questionnaire complete it and return it even if not currently farming. NASS will continue to follow-up with producers through the spring with mailings, phone calls, and personal visits. To avoid these additional contacts, farmers and ranchers are encouraged to complete their Census either online at www.agcounts.usda.gov or by mail as soon as possible. Responding online saves time by skipping sections that do not apply and automatically calculating totals. The online questionnaire is accessible on desktops, laptops, and mobile devices.

For more information about the 2017 Census of Agriculture, visit www.agcensus.usda.gov. For questions or assistance filling out the Census, call toll-free (888) 424-7828.


2017
CENSUS OF
AGRICULTURE
YOUR VOICE. YOUR FUTURE. YOUR OPPORTUNITY.
USDA
There's Still Time to Be Counted.
Respond Today!
www.agcensus.usda.gov

9. Don't miss the K-State Soybean School at Phillipsburg on March 21

It's not too late to attend a K-State Soybean School this year. Due to inclement weather, the Soybean School originally scheduled for January 22 in Phillipsburg was rescheduled for **March 21, 2018.**

The one-day school will cover a number of issues facing soybean growers including: weed control strategies, production practices, nutrient fertility, and insect management.

March 21 – Phillipsburg, KS

Phillips County Fair Building, 1481 US-183
Cody Miller, Phillips-Rooks District, codym@ksu.edu, 785-543-6845

Lunch will be provided courtesy of Kansas Soybean Commission (main sponsor of the schools). The schools will also be supported by Channel Seeds. There is no cost to attend, however participants are asked to pre-register by **March 19**. Please re-submit your registration if you had signed up for the original date.

Online registration is available at: K-State Soybean Schools

You can also preregister by emailing or calling the local K-State Research and Extension office listed above.

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