



**K-STATE**  
Research and Extension

## Extension Agronomy

# eUpdate

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*12/13/2019*

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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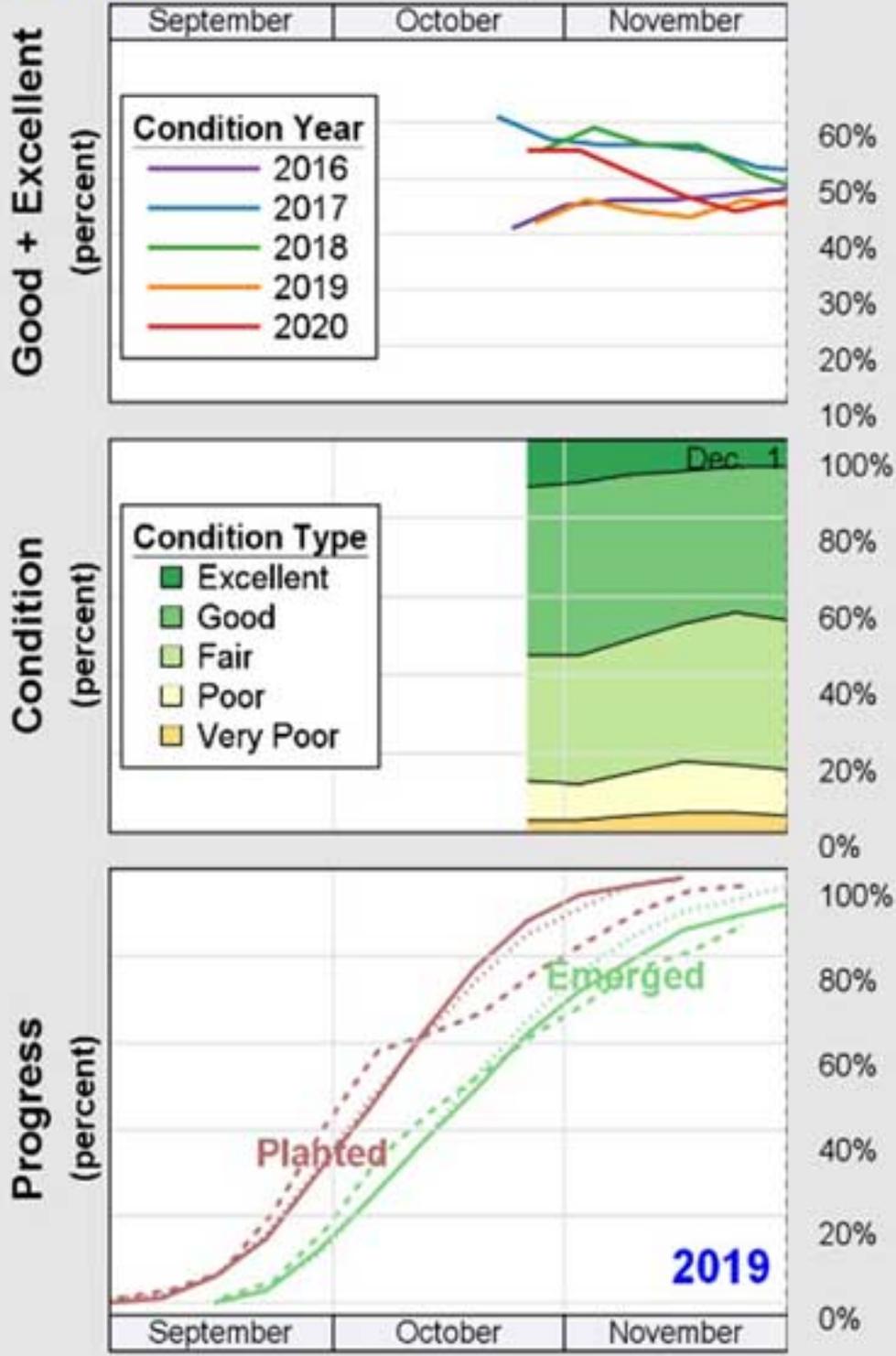
<b>1. Update on winter wheat growth and development in Kansas.....</b>	<b>3</b>
<b>2. Kansas Climate: What is the latest drought status for Kansas?.....</b>	<b>11</b>
<b>3. New K-State 2020 Chemical Weed Control Guide now available online.....</b>	<b>15</b>
<b>4. 2020 K-State Corn Schools - Finding what fits in a new decade.....</b>	<b>17</b>
<b>5. K-State Soybean Schools scheduled for January 2020.....</b>	<b>19</b>

## 1. Update on winter wheat growth and development in Kansas

While most of the 2019-20 Kansas wheat crop was sown relatively on time compared to the historical sowing pattern for Kansas (with the exception of some fields planted after a late-harvested soybean crop), the fraction of crop emerged is below average (Figure 1) and some of the emerged fields are in rough shape. Reasons for the delayed emergence include below-average precipitation and temperatures during the fall, which occurred in a large portion of the wheat-growing region in Kansas (central and western Kansas). For instance, central Kansas has received just 2 to 4 inches of precipitation since September 1. To provide a historical perspective, this results in anywhere from 3.0 to 4.5 inches below normal (Figure 2). In western Kansas, southwest in particular, the situation is even worse. The region received on average 0.3 to 2.5 inches of precipitation, which does not allow for optimum emergence of fall-planted crops (Figure 2).

# USDA

## Crop Progress



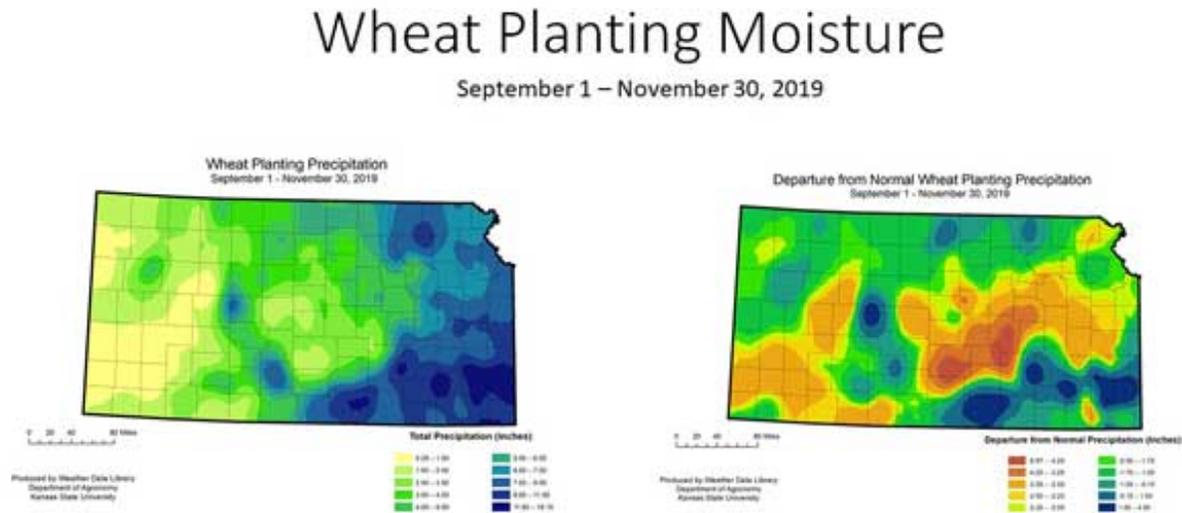
Source: National Agricultural Statistics Service (NASS)

Kansas State University Department of Agronomy

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**Figure 1. Kansas winter wheat progress as depicted by USDA-NASS. Upper panel shows percent of crop in good-excellent conditions; middle panel shows crop condition distribution across all levels; and lower panel shows crop planting and emergence progress. (Figure adapted from: [https://www.nass.usda.gov/Charts\\_and\\_Maps/Crop\\_Progress\\_&\\_Condition/2020/KS\\_2020.pdf](https://www.nass.usda.gov/Charts_and_Maps/Crop_Progress_&_Condition/2020/KS_2020.pdf)).**



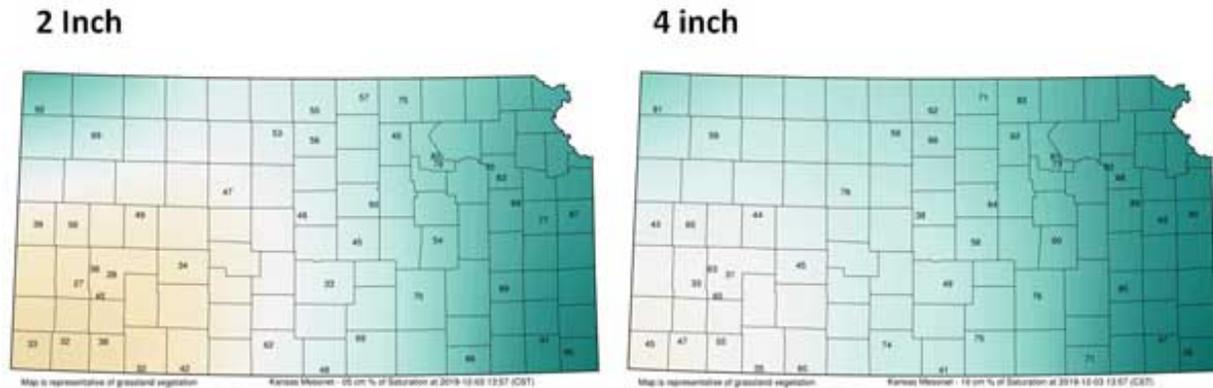
**Figure 2. Planting season precipitation (left) and departure from normal (right) for Sep. 1 – Nov. 30 across Kansas. Source: Weather Data Library.**

### Implications of a cool and dry fall

Below-average precipitation in a large portion of the Kansas wheat growing region reduced soil moisture availability (Figure 3). This might bring challenges to the wheat crop, especially for stand establishment and tillering, which would render the crop less winter-hardy and could result in winter survival issues (Figure 3).

# Percent of Soil Saturation

as December 3, 2019



**Figure 3. Percent soil saturation as of December 3, 2019. Source: [Kansas Mesonet](#)**

In most of Kansas' wheat growing region, wheat development is lagging compared to the historical average. Dry soil conditions precluded emergence in many fields, and those fields that emerged are not, on average, well developed due to a combination of dry and cool conditions. This combination may not have provided the crop enough time to tiller during the fall. One example is shown in Figure 4, where there is a comparison of fields planted in late September, late October, and early November. While these photos were taken in 2018, a very similar situation is true this year – although for a very different reason. In 2018, stand establishment was delayed due to excessive fall moisture precluding field activities (planting), while in 2019 planting typically occurred on time but dry soils and cool temperatures delayed stand establishment.



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**Figure 4. Late September (left) versus late October (center) versus early November (right) sowing dates and their effect on canopy development. Photos taken December 10, 2018 in Hutchinson by Leonardo Molssato, Assistant Scientist, K-State Wheat and Forages Production Group.**



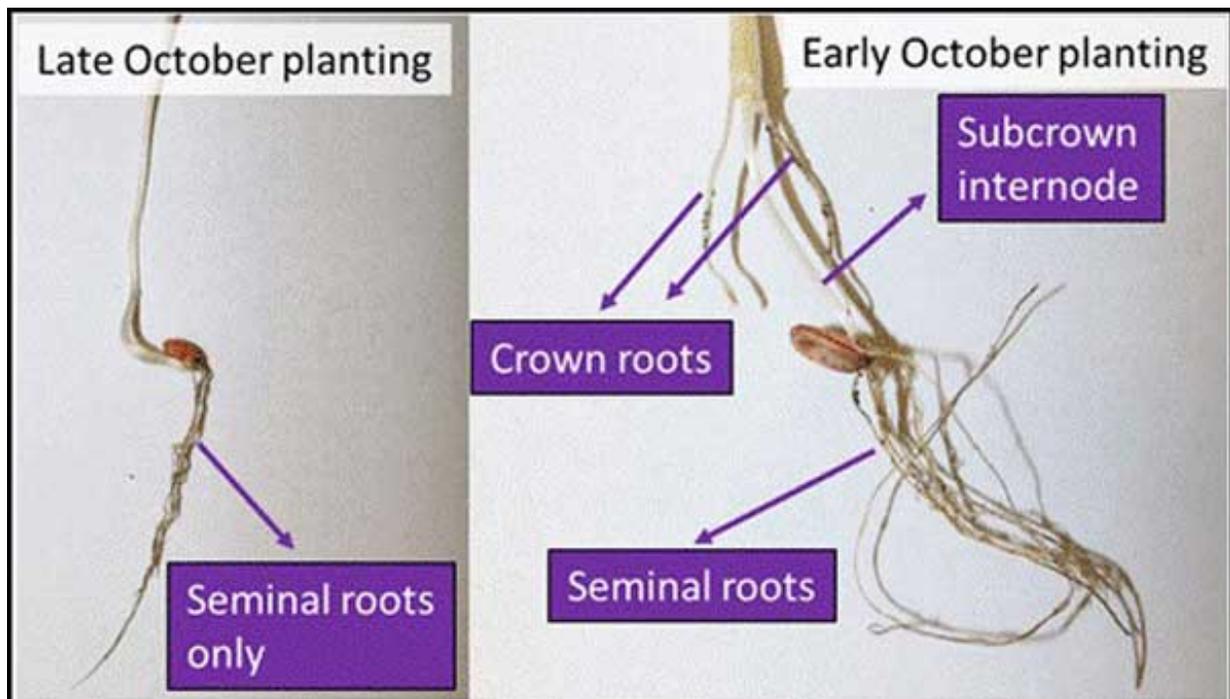
**Figure 5. Differences in wheat growth and development as affected by planting date. Wheat planted in late October showing no primary tillers (left), while wheat planted in early October has started to tiller (right). Both crops still need significant fall growth to properly prepare for winter dormancy. Photo taken at the Agronomy North Farm, Manhattan, Romulo Lollato, K-State Research and Extension.**

### **What should producers look for?**

Producers can assess the status of their wheat crop in a few different ways. One important way is

looking at the top-growth and counting leaves and tillers. As mentioned previously, wheat needs at least 4-5 leaves and 1-2 tillers prior to winter dormancy for maximum cold tolerance. Wheat that has fewer tillers and leaves will be more susceptible to winter kill (Figure 5).

It is important to also look at the root system development (Figure 5). Roots coming out from the seed are called seminal roots and are used to take up water and nutrients throughout the entire growing season. There are not very many of these roots, so their contribution to overall water and nutrient uptake is limited. Crown roots are illustrated in Figure 6, right panel. Crown roots are the two white protrusions coming out of the white area about an inch above the seed. These roots take up most of the water and nutrients needed by the plant, and they are very important for the plant to survive the winter. If a cow were grazing on this wheat, she would probably pull the plant out of the ground as there are not many roots holding the plant in the soil yet. Consequently, this wheat crop still needs considerable fall growth prior to grazing or winter dormancy.



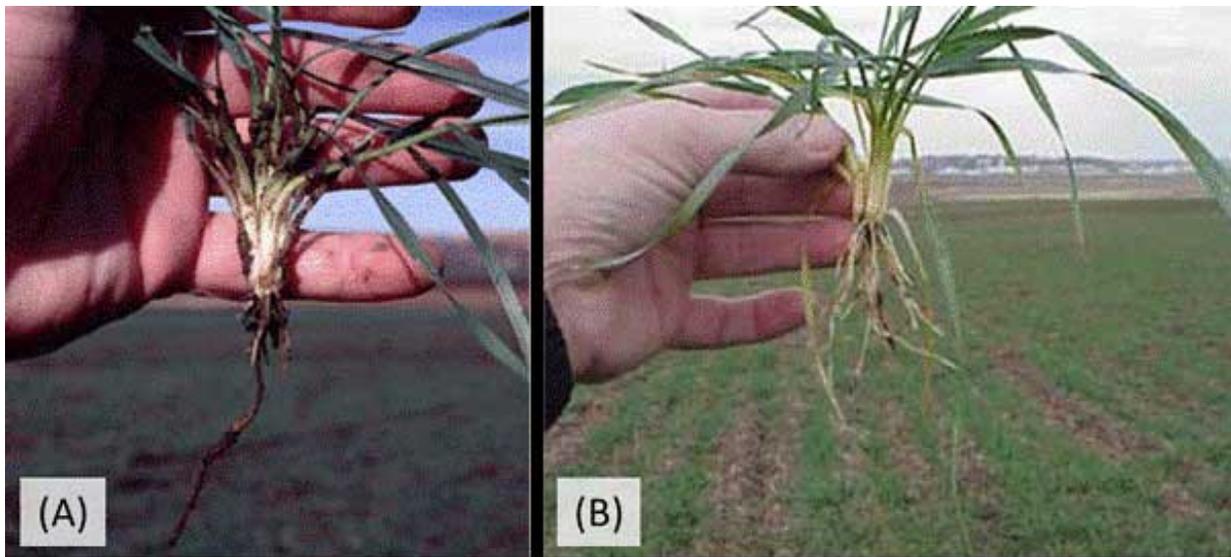
**Figure 6. Seminal and crown roots development in wheat as affected by planting date. Both rooting systems are developed enough to be grazed, and may be susceptible to nutrient deficiencies or desiccation damage over the winter if the crown roots develop further. Photos taken at the Agronomy North Farm, Manhattan, Romulo Lollato, K-State Research and Extension.**

The photos below illustrate various degrees of what you would like to see when you examine your wheat this fall. As expected, there is better canopy coverage with early-planted wheat for dual purpose (mid-September planting) as compared to wheat planted at the optimal planting time for grain only (mid-October planting). This does not necessarily mean the early-planted wheat is in better condition for winter. As long as the wheat planted in mid-October has 1-2 tillers and good crown root development (Figure 8B), the plants will have adequate growth going into winter. In addition to having adequate top-growth and root development, factors such as the extent of the

plants' cold hardening, variety differences in winter hardiness, soil moisture and temperature, and snow or plant residue protection on the soil surface will ultimately have an impact on winter survival.



**Figure 7. Fall growth and development of wheat as affected by planting date. Photos by Romulo Lollato, K-State Research and Extension.**



**Figure 8. (A) Some of the crown roots are over one-inch long. For this plant, a couple additional weeks of mild weather would allow for more root growth which would be desirable. (B) Ideal wheat above- and below-ground development before winter dormancy, with crown roots fully developed and able to provide water and nutrients to the plant. With this amount of crown root development, wheat plants should be well anchored. If cattle were grazing this wheat,**

**they could not pull the plants out of the ground. Photos by Jim Shroyer, professor emeritus, K-State Research and Extension.**

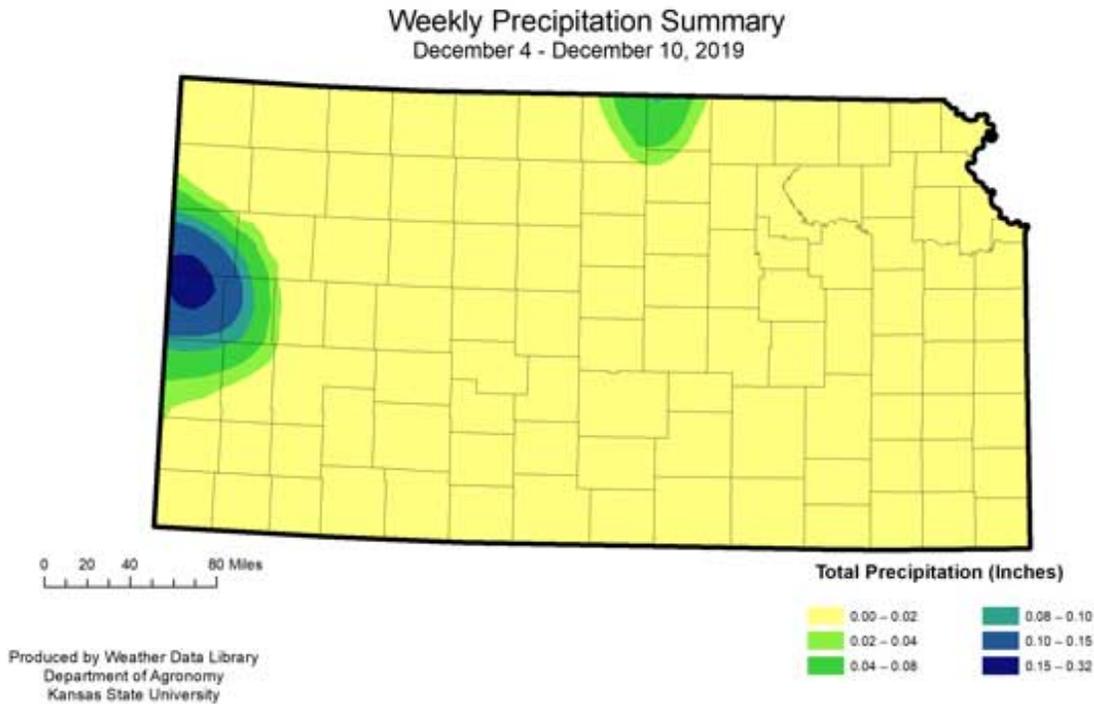
Stay tuned to future issues of the eUpdate for more information on the status of the 2020 wheat crop.

Romulo Lollato, Wheat and Forages Specialist  
[lolato@ksu.edu](mailto:lolato@ksu.edu)

Mary Knapp, Assistant State Climatologist and Weather Data Library  
[mknapp@ksu.edu](mailto:mknapp@ksu.edu)

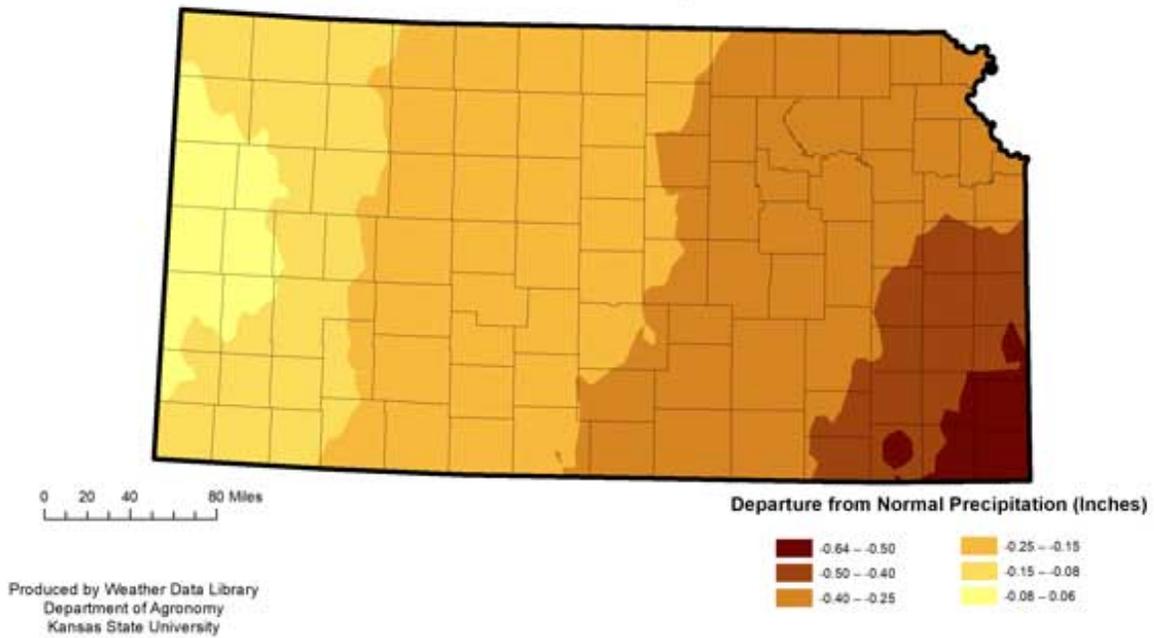
## 2. Kansas Climate: What is the latest drought status for Kansas?

It was another dry week across most of Kansas (Figures 1 & 2). Statewide precipitation averaged zero. The West-Central Division averaged the most precipitation, at 0.03 inches or 23 percent of normal. The only other division averaging above zero was the Northwest, with an average of 0.1 inches, 8 percent of normal. Highest weekly totals for the week ending on December 10<sup>th</sup> were: 0.17 inches at Tribune 13NNE, Greeley County (NWS); 0.20 inches at Weskan 0.4 NNW, Wallace County (CoCoRaHS) and 0.32 inches at the Scandia Mesonet, Republic County (Mesonet).



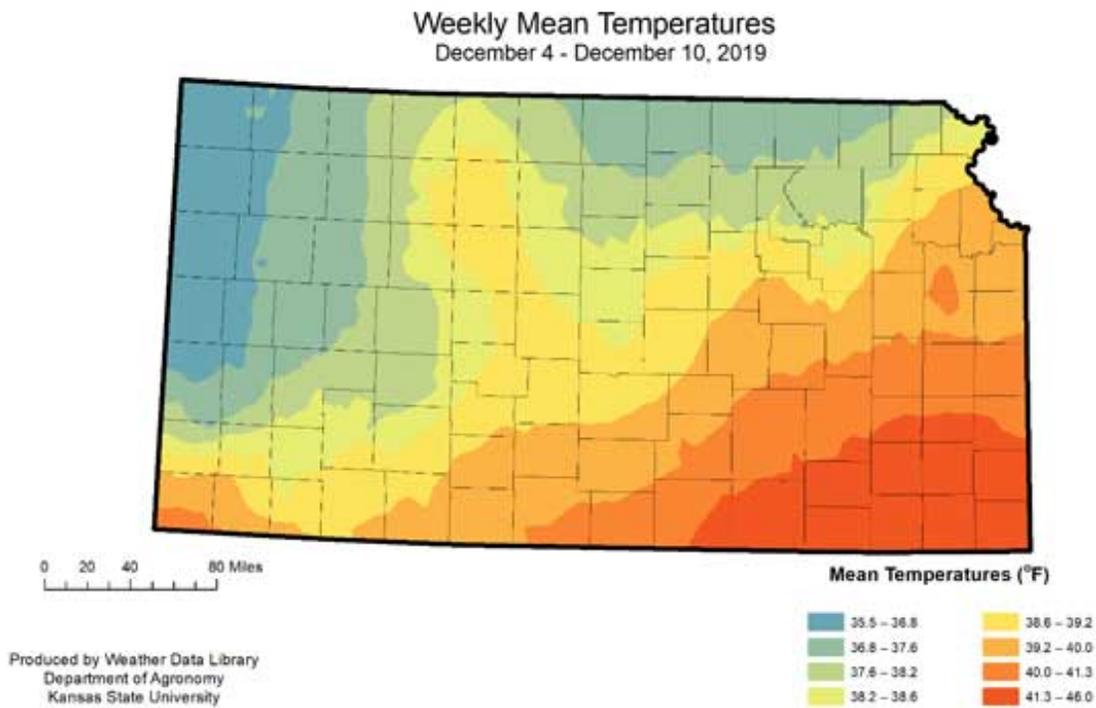
**Figure 1. Weekly precipitation for December 4-10, 2019 (Weather Data Library)**

Departure from Normal Weekly Precipitation  
December 4 - December 10, 2019

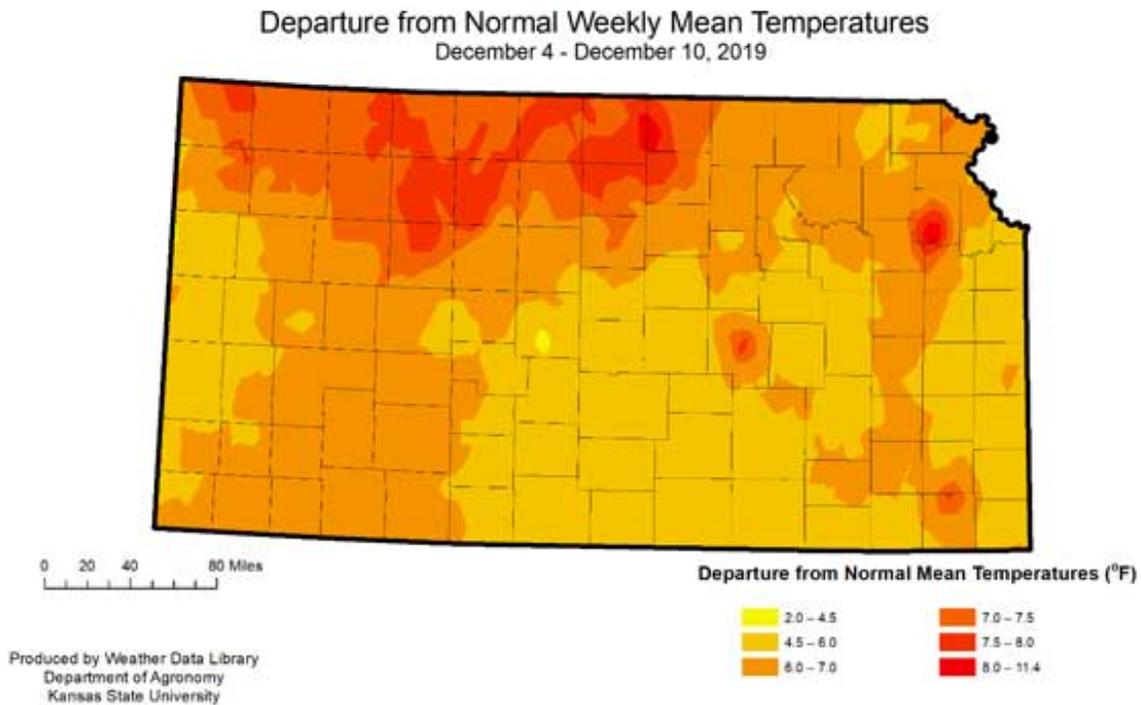


**Figure 2. Departure from normal precipitation for December 4-10, 2019 (Weather Data Library). The darker color indicates a greater departure from normal.**

Despite a cold end to the week, overall the week was much warmer than normal across the state (Figures 3 & 4). Statewide average temperature was 38.7 °F, 5.7 degrees warmer than normal. The North Central Division was the warmest, with an average of 38.1 °F, 7.0 degrees warmer than normal.

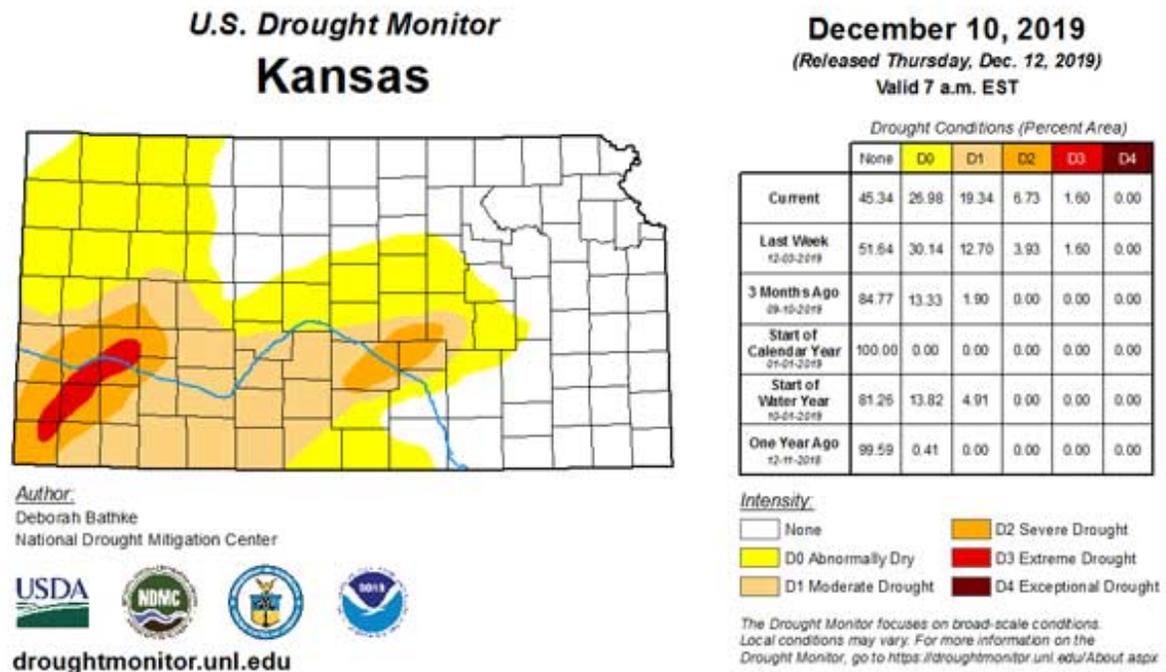


**Figure 3. Average mean temperatures for December 4-10, 2019 (Weather Data Library)**



**Figure 4. Departure from normal temperatures for December 4-10, 2019. The darker the color, the greatest departure from normal (Weather Data Library).**

The combination of warm, dry conditions resulted in expansion of the moderate to severe drought. In particular, moderate drought pushed further east into the South Central Division (Figure 5). Currently, less than half of the state is drought free, and 1.6 percent is in extreme drought. Given the fact that this is a dry time of the year, even with above-normal precipitation, the most severe areas will be slow to improve. On the other hand, a dry winter will provide some relief to the eastern third of the state where rivers and reservoir levels are still high.



**Figure 5. Current drought status for Kansas as of December 10, 2019 (US Drought Monitor)**

Mary Knapp, Assistant State Climatologist  
[mknapp@ksu.edu](mailto:mknapp@ksu.edu)

Christopher "Chip" Redmond, Kansas Mesonet Manager  
[christopherredmond@k-state.edu](mailto:christopherredmond@k-state.edu)

### 3. New K-State 2020 Chemical Weed Control Guide now available online

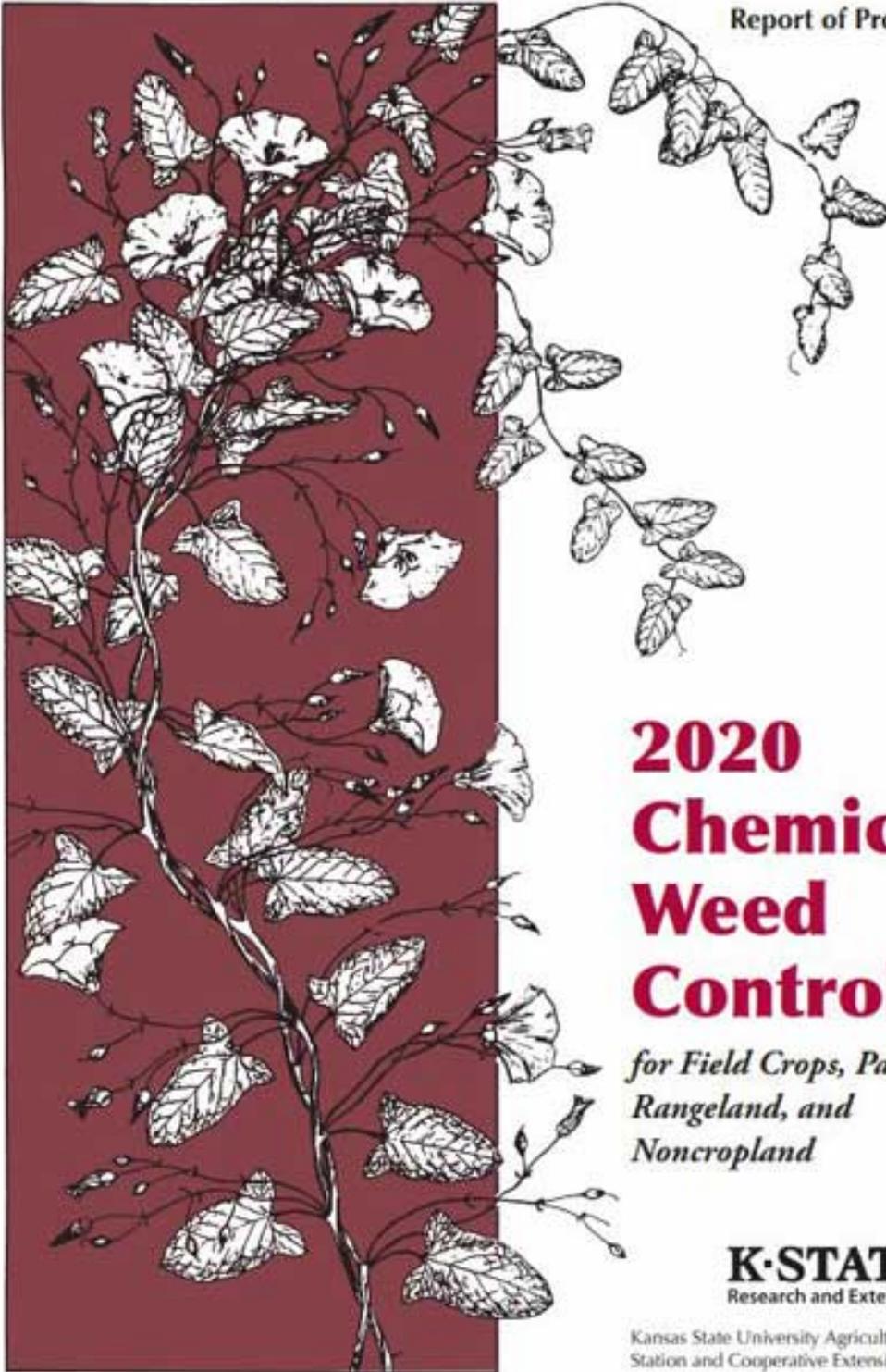
The new K-State 2020 Chemical Weed Control Guide is now available online at:

<https://www.bookstore.ksre.ksu.edu/pubs/SRP1155.pdf>

To increase efficiency of crop production, use weed control practices in conjunction with other crop and soil management practices such as planting high-quality seed, planting at the optimum rate and date, and maintaining optimum soil fertility. This publication provides suggestions for chemical weed control in several major crops. For crops not listed, consult your local K-State Research and Extension agricultural agent.

Hard copies of this publication will be available soon. Check with your local Extension office for their availability or you can order one online at <https://www.bookstore.ksre.ksu.edu/>.

Sarah Lancaster, Weed Management Specialist  
[slancaster@ksu.edu](mailto:slancaster@ksu.edu)



# 2020 Chemical Weed Control

*for Field Crops, Pastures,  
Rangeland, and  
Noncropland*

**K-STATE**  
Research and Extension

Kansas State University Agricultural Experiment  
Station and Cooperative Extension Service

## 4. 2020 K-State Corn Schools - Finding what fits in a new decade

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

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

### Corn Management Schools

The dates and locations are:

- **January 6** - Montezuma (optional Corn-Fed Beef Seminar to follow)  
Hy-Plains Feedyard  
7505 U.S. Hwy 56  
Montezuma, KS 67867
- **January 8** – Parsons  
Southeast Area Extension Office  
25092 Ness Rd.  
Parsons, KS 67357
- **January 10** – Wichita  
Sedgwick Co. Extension Office  
7001 W 21st St.  
Wichita, KS 67205
- **February 3** – Oakley  
Buffalo Bill Cultural Center  
3053 US-83  
Oakley, KS 67748
- **February 5** – Salina  
Hilton Garden Inn  
3320 S 9th St,  
Salina, KS 67401
- **February 7** – Olathe  
John Deere Ag Marketing Center  
10789 S Ridgeview Rd

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, but participants are asked to pre-register before Jan. 3 for the January schools and before Feb. 4 for the February schools. Farmers can register online at [kscorn.com/cornschoo](http://kscorn.com/cornschoo), 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.

Ignacio Ciampitti, Crop Production and Cropping Systems Specialist  
[ciampitti@ksu.edu](mailto:ciampitti@ksu.edu)

Stacy Mayo-Martinez, Kansas Corn  
[smartinez@ksgrains.com](mailto:smartinez@ksgrains.com)

## 5. K-State Soybean Schools scheduled for January 2020



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

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

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

### **January 13 – Monday**

- **Smith Center, KS** - 9:30 am to 1:30 pm

St. Mary's Catholic Church Parish Hall  
403 W. Highway 36  
Contact: Sandra Wick, [swick@ksu.edu](mailto:swick@ksu.edu)  
RSVP by January 8

- **Salina, KS** - 3:30 to 7:30 pm

Webster Conference Center  
2601 North Ohio Street  
Contact: Jay Wisbey, [jwisbey@ksu.edu](mailto:jwisbey@ksu.edu)  
RSVP by January 8

### **January 14 – Tuesday**

- **Mulvane, KS** - 9:30 am to 1:30 pm

Pix Community Center  
101 E Main St  
Contact: Randy Hein, [rvhein@ksu.edu](mailto:rvhein@ksu.edu); Jeff Seiler, [jseiler4@ksu.edu](mailto:jseiler4@ksu.edu)  
RSVP by January 8

### January 21 - Tuesday

- **Emporia, KS** - 3:30 pm to 7:30 pm

Anderson Building  
Lyon County Fairgrounds  
2650 W US Hwy 50  
Contact: Brian Rees, [brees@ksu.edu](mailto:brees@ksu.edu)  
RSVP by January 16

### January 22 - Wednesday

- **Atchison, KS** - 9:30 am to 1:30 pm

Cedar Ridge Restaurant (4 miles NW of Atchison)  
17028 318th Rd.  
Contact: Ray Ladd, [cladd@ksu.edu](mailto:cladd@ksu.edu)  
RSVP by January 17

- **Marysville, KS** - 3:30 to 7:30 pm

Marysville Helvering/Senior Center  
111 S 8th St (Please use the west door)  
Contact: Anastasia Johnson, [anastasia@ksu.edu](mailto:anastasia@ksu.edu)  
RSVP by January 17

On-site registration will begin 30 minutes prior to the program start time listed above. A meal will be provided courtesy of our sponsors. There is no cost to attend, but participants are asked **to pre-register, if possible, for the school they plan to attend**. Online registration is available at K-State Soybean Schools (<http://bit.ly/KSUSoybean>) or by emailing/calling the nearest local K-State Research and Extension office for the location participants plan to attend. CCA and CEU credits have been applied for.

Ignacio Ciampitti, Crop Production and Cropping Systems Specialist  
[ciampitti@ksu.edu](mailto:ciampitti@ksu.edu)

Stu Duncan, Northeast Area Crops and Soils Specialist  
[sduncan@ksu.edu](mailto:sduncan@ksu.edu)

Kathy Gehl, eUpdate Editor and Extension Program Coordinator  
[kgehl@ksu.edu](mailto:kgehl@ksu.edu)