Issue 492

K-STATE Research and Extension

Extension Agronomy

eUpdate

02/06/2015

These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, 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 Steve Watson, 785-532-7105 swatson@ksu.edu, Jim Shroyer, Crop Production Specialist 785-532-0397 jshroyer@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Crop water use: Seasonal and crop maturity variations

(Editor's note: Crop water use is an increasingly important consideration in Kansas agriculture, both on dryland and irrigated ground. The following is an excerpt from a new K-State publication that discusses this topic in detail, *Agricultural Crop Water Use*, L934: http://www.ksre.ksu.edu/bookstore/pubs/L934.pdf/ The figure and table numbers shown in this article are those used in the actual publication. – Steve Watson)

Crop water use, also referred to as evapotranspiration (ET), is the water used by a crop for growth and cooling. Only a small fraction of the water a plant takes in is used for growth, often only about 1 percent; the majority of water is needed to allow the plant to cool itself. The movement of water into the plant is important, since this water carries essential nutrients needed by the plant for growth processes.

Seasonal crop water use variations for a specific crop occur due to differences in year-to-year weather conditions and due to the specific variety or hybrid for a given crop, especially as related to the maturity length. Typical ranges of seasonal and daily crop water use values and ranges from numerous studies are shown in Table 1a.

Table 1a. Ranges of seasonal and daily crop water use values for selected crops in Kansas.

Crop	Seasonal Crop Water Use (ET) (Inches)	Generalized and Reported Maximum Daily Peak Crop Water Use (ET) (Inches)	Study Location	References (See Table 1b for letter designations)
Alfalfa	31.5–63	----	Generalized — World	E
Alfalfa	32–48	0.55	Regional — Central Plains	A, D, P
Alfafa	----	0.32*	Kansas	G
Alfalfa	32.6–44.76	----	Garden City, KS	B
Corn (Maize)	19.69–31.5	----	Generalized — World	E
Corn	22–30	0.50	Regional — Central Plains	D, K
Corn	----	0.49	Bushland , TX	H
Corn	22.6–28.6	---	Colby, KS	F
Corn	22.0–29.1	----	Colby, KS	I
Corn	Avg 25.4, 20.2–31.6	---	Tribune, KS	J
Corn	4-yr Avg, 29.58	---	Tribune, KS	N
Corn	21.69–22.99	---	Manhattan and Tribune, KS	C
Corn	20.12–26.89	----	Garden City, KS	M
Corn	15.6–17.7	0.49	China	T
Soybeans	17.72–27.56	----	Generalized — World	E
Soybeans	18–24	0.32*	Regional — Central Plains	D
Soybeans	20–26	0.48	Regional — Nebraska	L
Soybeans	17.36–23.46	----	Manhattan and Tribune, KS	C
Grain Sorghum	17.72–25.59	----	Generalized — World	E
Grain Sorghum	16–22	0.40	Regional — Central Plains	D
Grain Sorghum	----	0.40	Bushland , TX	H
Grain Sorghum	17.76–20.59	----	Manhattan and Tribune, KS	C
Grain Sorghum	Avg 26.1, 21.2–30.6	---	Tribune, KS	J
Grain Sorghum	18.3–22.8	---	Garden City, KS	M
Grain Sorghum	21.5–28.0	0.51	Bushland , TX	S
Sunflowers	23.62–39.37	----	Generalized — World	E
Sunflowers	16–20	0.28*	Regional — Central Plains	D
Sunflowers	18.74–22.99	----	Manhattan and Tribune, KS	C
Sunflowers	Avg 22.7, 21.4–24.8	---	Tribune, KS	J
Wheat	17.72–25.59	----	Generalized — World	E
Wheat	16–24	0.40	Regional — Central Plains	D, Q
Wheat	---	0.54	Bushland , TX	H
Wheat	15.4–23.4	---	Garden City, KS	M
Wheat	15.8–18.2	0.35	China	T
*Value appears low; see Table 2 discussion.				

Table 1b. References associated with letter designations of Table 1a.

Reference Designation	Reference
A	Rogers, D.H. and M. Alam. 1998. "Irrigating Alfalfa." Chapter 4 of the *Alfalfa Production Handbook*. Kansas State University Research and Extension bulletin C-683 (revised) Manhattan, KS. 5 pgs.
B	Klocke, N.L., R.S. Currie and J.D. Holman. 2013. "Alfalfa Response to Irrigation from Limited Water Supplies." In press: *Transaction of ASABE*.
C	Hattendorf, M.J., M.S. Redelfs, B. Amos, L.R. Stone, and R.E. Gwin, Jr. 1988. "Comparative Water Use Characteristics of Six Row Crops." *Agron. J.* 80:80-85 (1988).
D	Shawcroft, R.W. 1989. "Crop Water Use." In proceedings of the 1989 Central Plains Irrigation Workshop. Colby, KS. 6 pgs.
E	FAO. 1986. *Irrigation Water Management Training Manual*, no. 3, Chapter 3, "Crop Water Needs." Rome, Italy. 20 pgs.
F	Lamm, F.R., R.M. Aiken, and A.A. Abou Kheira. 2009. "Corn Yield and Water Use Characteristics as Affected by Tillage, Plant Density and Irrigation." *Trans. of ASABE*. Vol. 52(1): 133-143.
G	Stone, L.R., A.J. Schlegel, A.H. Kahn, N.L. Klocke. 2006. "Water supply: yield relationships developed for study of water management." *Journal of Natural Resources and Life Sciences Education*. 35:161-173.
H	Howell, T.A., J.L. Steiner, A.D. Schnieder, S.R. Evett, and J.A. Tolk. 1994. *Evapotranspiration of Irrigated Winter Wheat, Sorghum and Corn.* ASAE Paper no. 94-2081
I	Lamm, F.R. and R.M. Aiken. 2007. *Conventional, Strip and No Tillage Corn Production under Different Irrigation Capacities*. CPIA 2007.
J	Stone, L.R., A.J. Schlegel, R.E. Gwin, Jr. and A.H. Khan. 1996. "Response of corn, grain sorghum, and sunflower to irrigation in the High Plains of Kansas." *Agricultural Water Management* 30 (1996) pp. 251-259.
K	Rogers, D. H. 2007. "Irrigation." Chapter of *Corn Production Handbook*. Kansas State University Research and Extension. C-560. pp. 30-36.
L	Kranz, W.L., R.W. Elmore, and J.E. Specht. 2005. *Irrigating Soybean*. NebGuide G1367. University of Nebraska – Lincoln. 4 pgs.
M	Klocke, N.L. 2014. "Corn and Forage Sorghum Response to Limited Irrigation, Drought, and Hail." Manuscript SW-10810-2014.R1. Accepted for *Applied Engineering in Agriculture*.
N	Schlegel, A., L. Stone, and T. Dumler. 2010. "Managing Irrigation with Diminished-Capacity Wells." In *2010 SWREC Field Day Report of Progress 1034*. Kansas State University Research and Extension. pp. 35-39.
O	Rogers, D. H., J. P. Schneekloth, and M. Alam. April 2009. "Irrigation Management," chapter of the *High Plains Sunflower Production Handbook*. Kansas State Research and Extension. Bulletin MF-2384. pp.12-17.
P	Alam, M. and D.H. Rogers. March 2009. *Irrigation Management for Alfalfa*. Kansas State Research and Extension. Irrigation Management Series MF-2868.
Q	Rogers, D.H. 1997. "Irrigation Management." *Wheat Production Handbook*. K-State Research and Extension. C-529. pp 29-31.
R	Rogers, D.H. 1997. "Irrigation." *Soybean Production Handbook*. C-449. K-State Research & Extension. C-449. pp 15-19.
S	Tolk, J.A. and T.A. Howell. 2001. "Measured and Simulated Evapotranspiration of Grain Sorghum with Full and Limited Irrigation in Three High Plains Soils." *Transactions of ASAE*. Vol. 44(6):1553-1558.
T	Lui, C., X. Zhang, Y. Zhang. 2002. "Determination of daily evaporation and evapotranspiration of winter wheat and maize by large-scale weighing lysimeter and micro-lysimeter." *Agricultural and Forest Meteorology* 111 (2002) 109-120.

Table 2. Comparative Water Use of Crops. (Hattendorf et al., 1988)

Crop	Seasonal Water Use (inches)	Max Value of Measured ET/ Reference ET	Mean Daily Water Use Rate (in/day)
Corn	22.2	1.15	0.19
Grain Sorghum	19.1	1.05	0.19
Pinto Bean	16.7	1.13	0.19
Soybean	21.3	1.09	0.19
Sunflower	21.5	1.35	0.24

Crop water use variations for a given crop based on maturity length are illustrated in Figure 5. In the example, five maturity lengths of corn were planted at the same date and population. The crop water use for a longer maturity length, as might be expected, has a higher water use requirement than for a shorter maturity length. In this example, the water use variation from the shortest maturity to the longest maturity was approximately 4 inches. Normally, the crop water use value cited for an area is for the longest maturity group that can be reliably grown in an area. Extremely detrimental yield losses can occur if a too long of maturity group crop is planted and growth is stopped by frost before the crop has reached yield maturity.

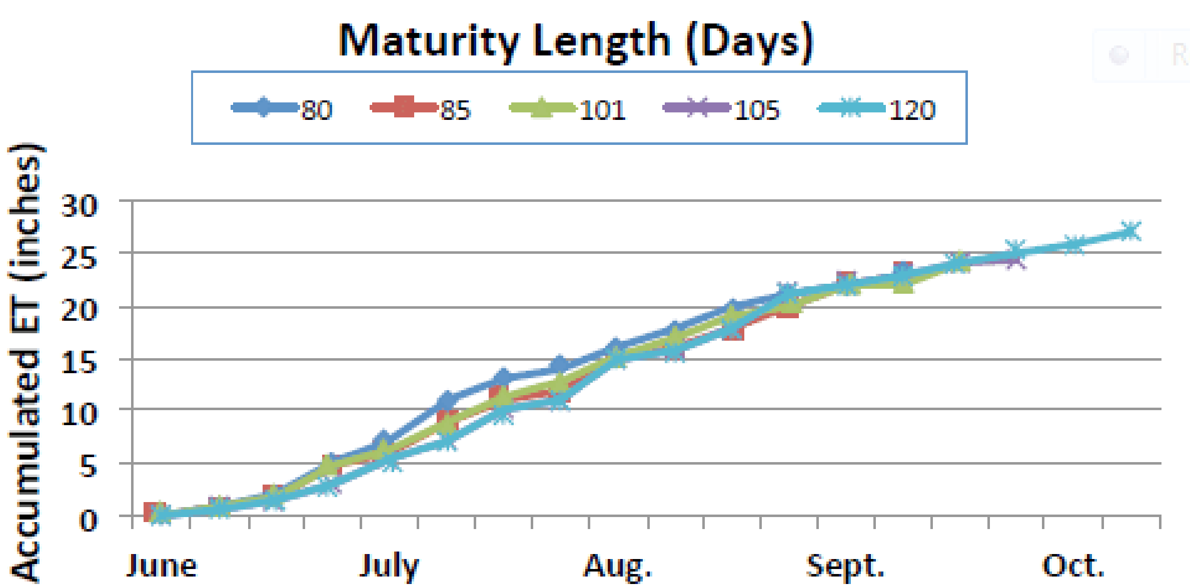

Figure 5. Seasonal water use for five corn maturity lengths. (Watts, 1982 — unpublished data)

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2. Crop water use and yield

(Editor's note: Producers often like to know what kind of yield they might expect from a given level of expected available water during the crop season for various crops. This is true for both dryland and irrigation production. Daily and seasonal variations from the basic long-term trends will affect irrigation scheduling in any given year. This can be accounted for by using a computer program such as K-State's KanSched. The following is an excerpt from a new K-State publication that discusses this, and other water-related topics, *Agricultural Crop Water Use*, L934: http://www.ksre.ksu.edu/bookstore/pubs/L934.pdf/ The figure and table numbers shown in this article are those used in the actual publication. – Steve Watson)

Yield and crop water use are closely linked and linearly related; meaning the more crop evapotranspiration (ET), the more yield until the production limit is reached. This is illustrated in Figure 8.

Basic crop water use curve

Threshold ET is the amount of crop water use needed to grow the crop until the seed-producing segment of the yield. In forage crops, when the entire above-ground portion of the crop is harvested, the threshold ET would be zero, and the y axis would be the weight of dry matter production. Often the crop water production function is referred to as the crop water use curve, which is the curvilinear line of Figure 8.

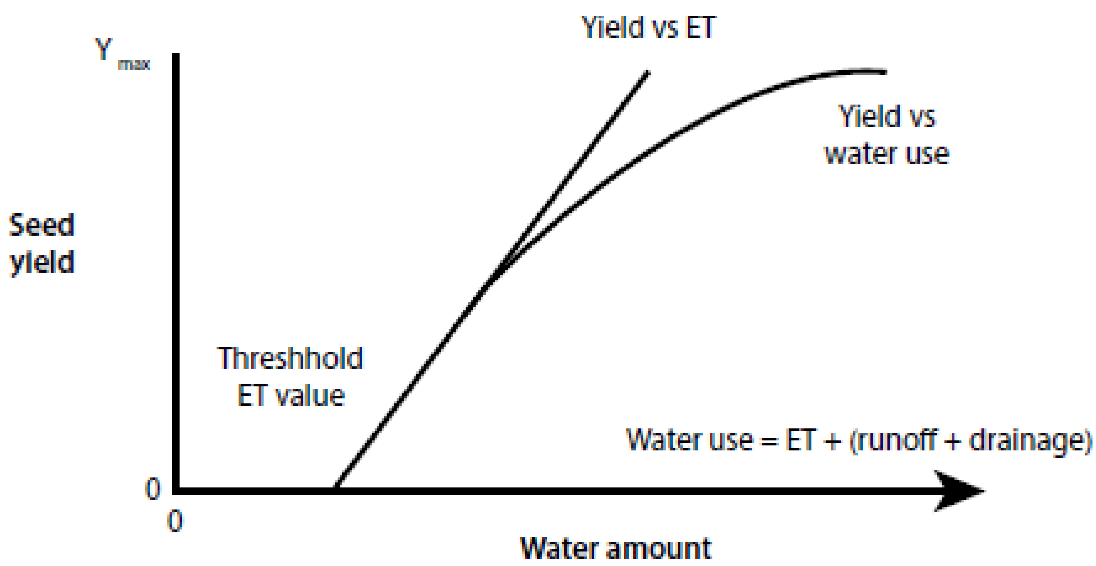

Figure 8. Generalized relationship between yield and water amount (ET or water use). (Stone and Schlegel 2006)

This line includes the ET amount plus additional water applied to a field either by rainfall or irrigation but was lost to runoff, drainage, or evaporation. Drainage water also is called deep percolation and is water that moves past the crop root zone and therefore cannot be accessed by the plant. The water use curve represents the average long-term yield response of a crop for a particular location. The crop's root depth and the soil water holding capacity determine the amount of water that can be held in the soil for the crop to use.

When rainfall and/or irrigation water is added to the field in amounts that keep this water availability in the upper range for optimum growth, there is less room for water storage in the soil; also, wetter soils have slower infiltration rates. Both of these factors increase the potential loss of water due to drainage or runoff when it rains.

Irrigation water applications should be scheduled so no water is applied unless there is sufficient root zone soil water storage available for the application; however, every irrigation system has an associated efficiency, which means some applied water may not be used by the crop. The general objective of irrigation is to keep the soil water in the optimum range, so less storage of rainfall after an irrigation event may occur, since perfect weather forecasts are not possible.

Crop yield and water use relationships for important Kansas crops are shown in Figure 9, with the threshold ET values and yield slope shown in Table 4. Corn, soybeans, grain sorghum, and sunflowers are all spring-planted, summer-grown crops, while winter wheat is fall-planted, grows until winter dormancy, resumes growth in spring, and matures in early to mid-summer. Corn and grain sorghum are generally used as feed grains, although they are also stock for ethanol production. Corn tends to be grown in areas with irrigation or higher rainfall instead of grain sorghum due to higher yield potential. Grain sorghum initiates grain yield at a lower ET threshold, which can give it a production advantage over corn in lower rainfall areas under dryland or limited irrigation conditions.

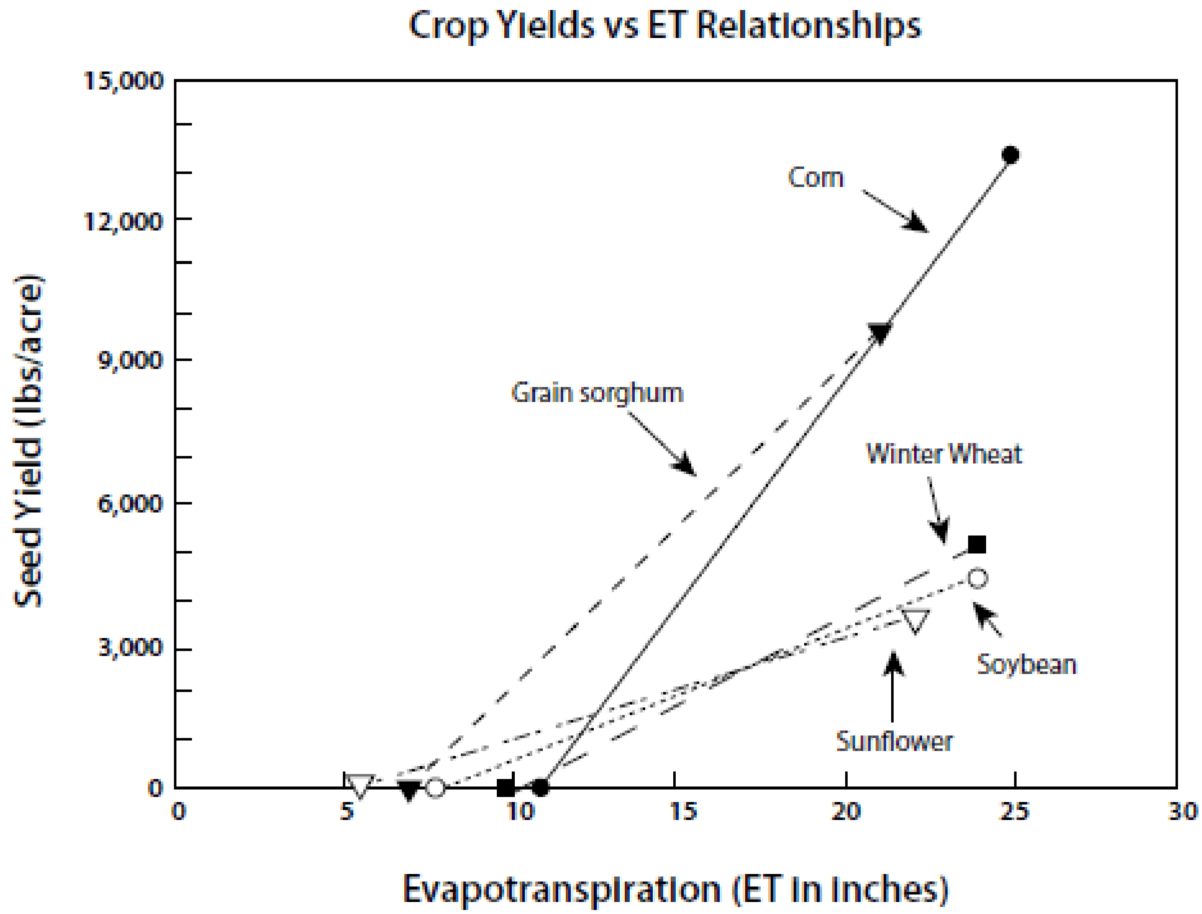

Figure 9. Yield versus ET for various crops. (Stone et al., 2006. Crop Yield as Related to Evapotranspiration).

Table 4. Yield versus ET relationship for crops of the central High Plains. (Stone et al. 2006)

Crop	Max ET for full-season variety (inches)	Threshold ET (inches)	Slope of yield vs ET (bushels/ acre/inch)	Slope of yield vs ET* (bushels/ acre/inch)
Corn	25	10.9	16.9	13.3
Soybean	24	7.8	4.6	3.8
Grain Sorghum	21	6.9	12.2	9.4
Sunflower	22	5.4	218**	150**
Winter Wheat	24	10.0	6.0	4.6
* Long-term (multi-year) slope is less than full slope due to yield reducing factors other than water stress such as hail, freeze damage, insects, diseases, and lodging.				
** (pounds/acre/inch)				

Seasonal variations and implications for irrigation scheduling

The crop water production functions are useful planning tools but represent the long-term response of crops to growing conditions. Crop water use varies based on the seasonal weather conditions. This is illustrated by a long-term water use study on corn at Garden City. The study had six levels of irrigation treatment, as shown in Table 5.

Table 5. Irrigation frequency and application depths for a long-term water use study on corn. (Klocke, et al., 2014)

Irrigation Treatment	Irrigation Frequency (days)	Total irrigation (inches)	Percent of Full Irrigation
1	5	13	100
2	7	10	80
3	8	8	65
4	11	6	47
5	16	4	33
6	22	2	20

Figure 10 shows the yields for each of the six irrigation treatments for each of the seven years of the study. The precipitation ranged from above normal to extreme drought at the site during the study period. Yield for the higher water treatments were generally good, although in some years, yield was suppressed due to hail.

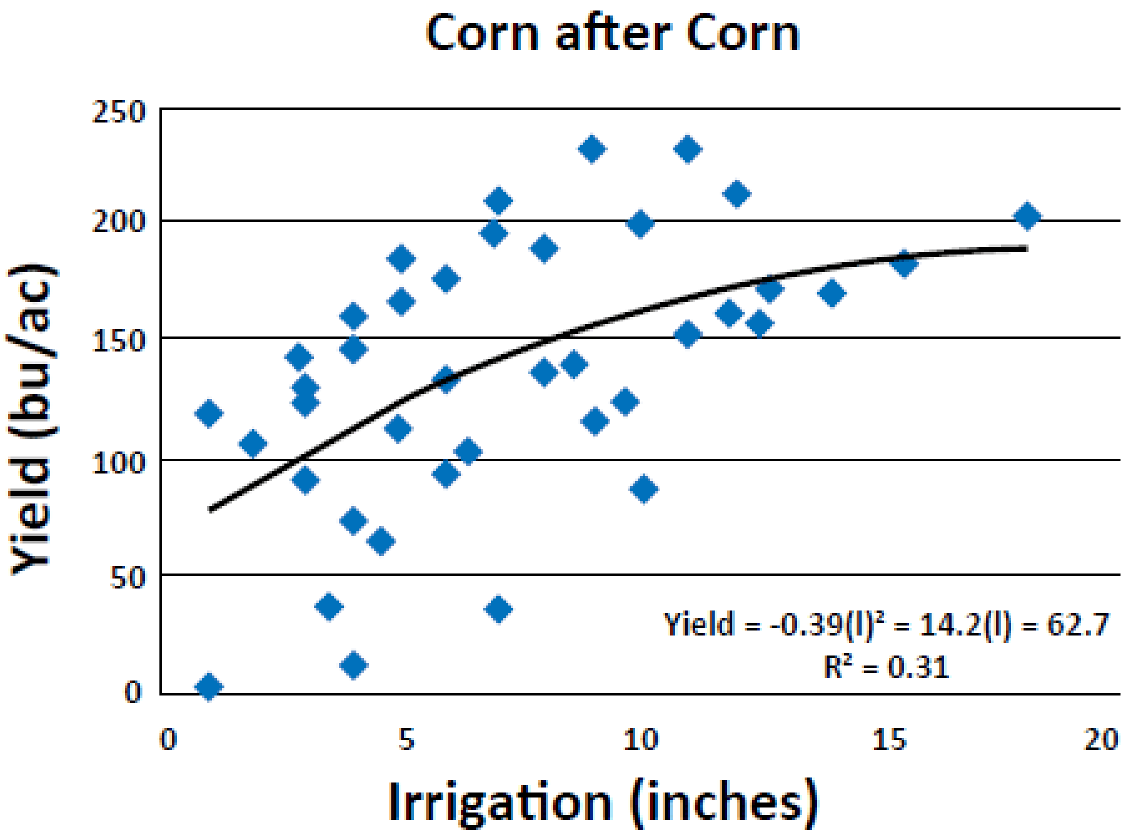

Figure 10. Corn yield as related to irrigation amount for Garden City, Kansas. (Klocke, et al. 2014).

In general, notice the variation of yield decreases with increasing irrigation. This is more easily seen in Figure 11, which shows the relative yield of the study. Relative yield is the yield of an individual treatment divided by the maximum yield of the year multiplied by 100 to make it a percentage. This removes the year-to-year yield variation effect. The irrigation application depths for the highest yield level ranged from about 8 inches to about 19 inches (the seven 100 percent yield data points of Figure 11), which dramatically illustrates the need to schedule irrigation using current-year conditions versus long-term averages.

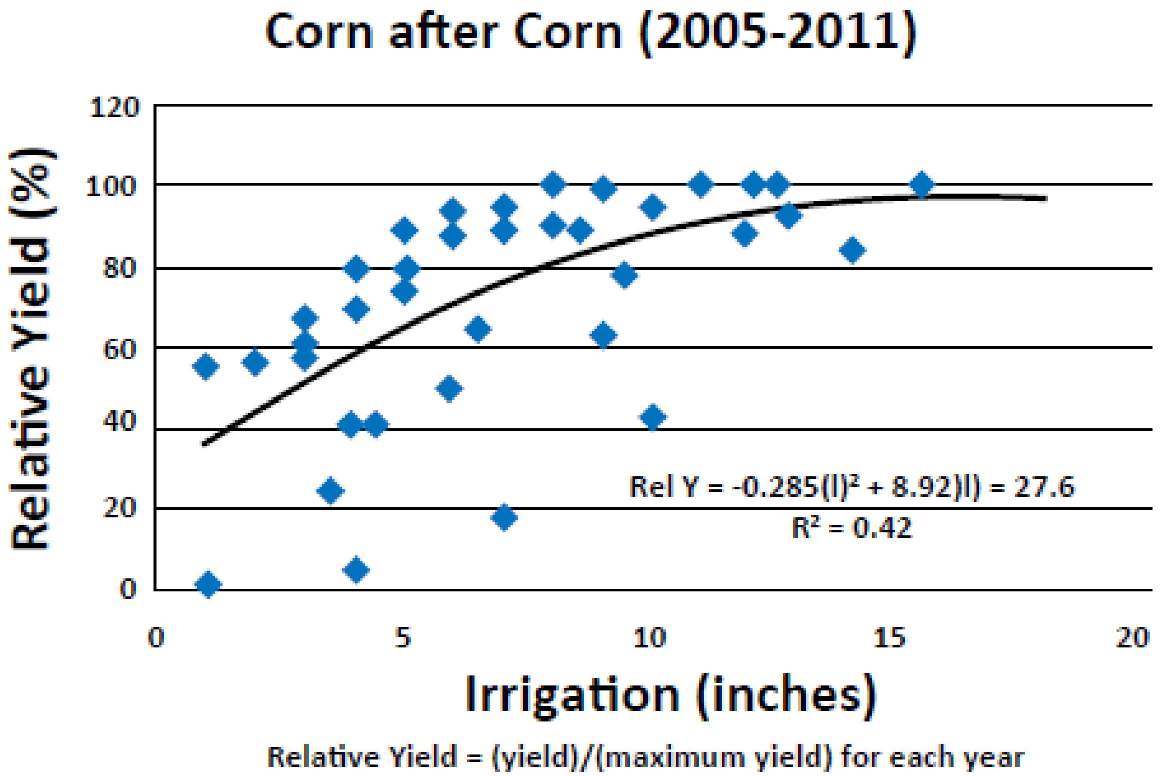

Figure 11. Relative corn yield as related to irrigation amount for Garden City, Kansas. (Klocke, et al. 2014).

The individual year relative yields are shown in Figure 12; note the yield response curve of 2011, the drought year. This was the only year with yield failure at the dryland treatment level. More than 7 inches of irrigation was needed to achieve 20 percent relative yield level, just slightly less than the full irrigation treatment application in 2009.

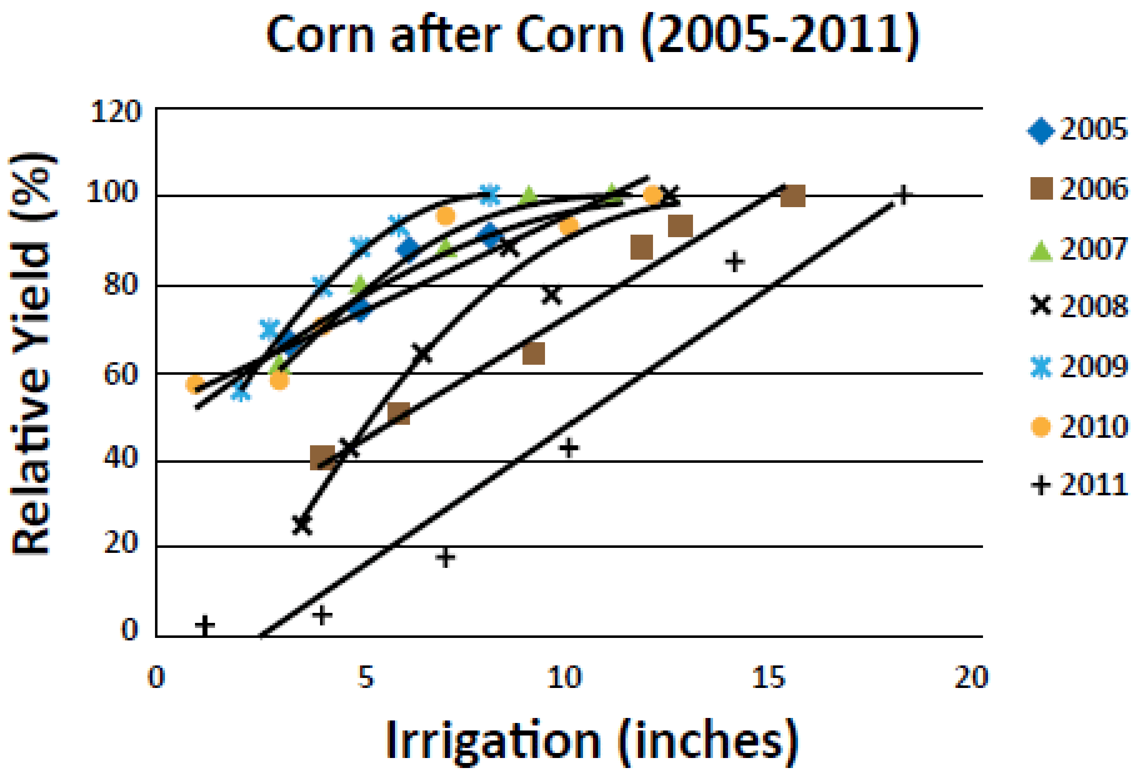

Figure 12. Relative corn yield as related to irrigation amount by year for Garden City, Kansas. (Klocke, et al. 2014).

The range of full irrigation treatment application depth demonstrates the need to use some form of irrigation scheduling. The day-to-day variation in water use, when combined with seasonal rainfall variations, can result in wide fluctuation of the annual irrigation requirement. KanSched, an ET-based irrigation scheduling program, is available to assist producers in scheduling irrigation: http://www.bae.ksu.edu/mobileirrigationlab/

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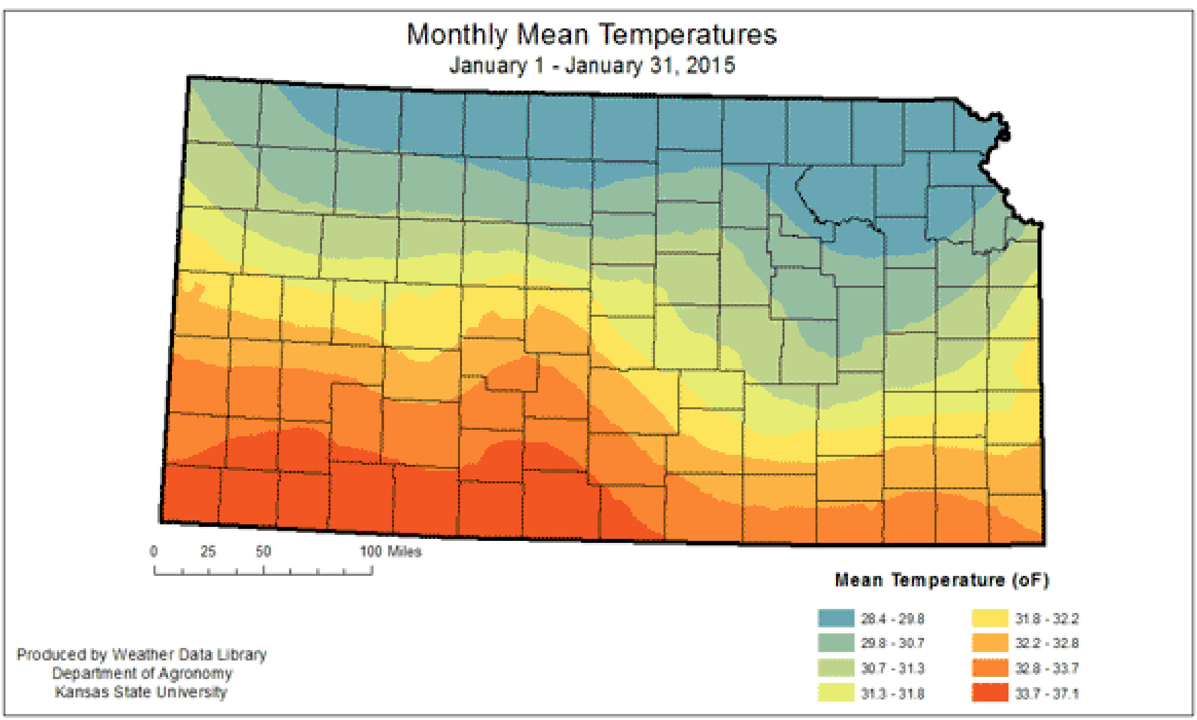
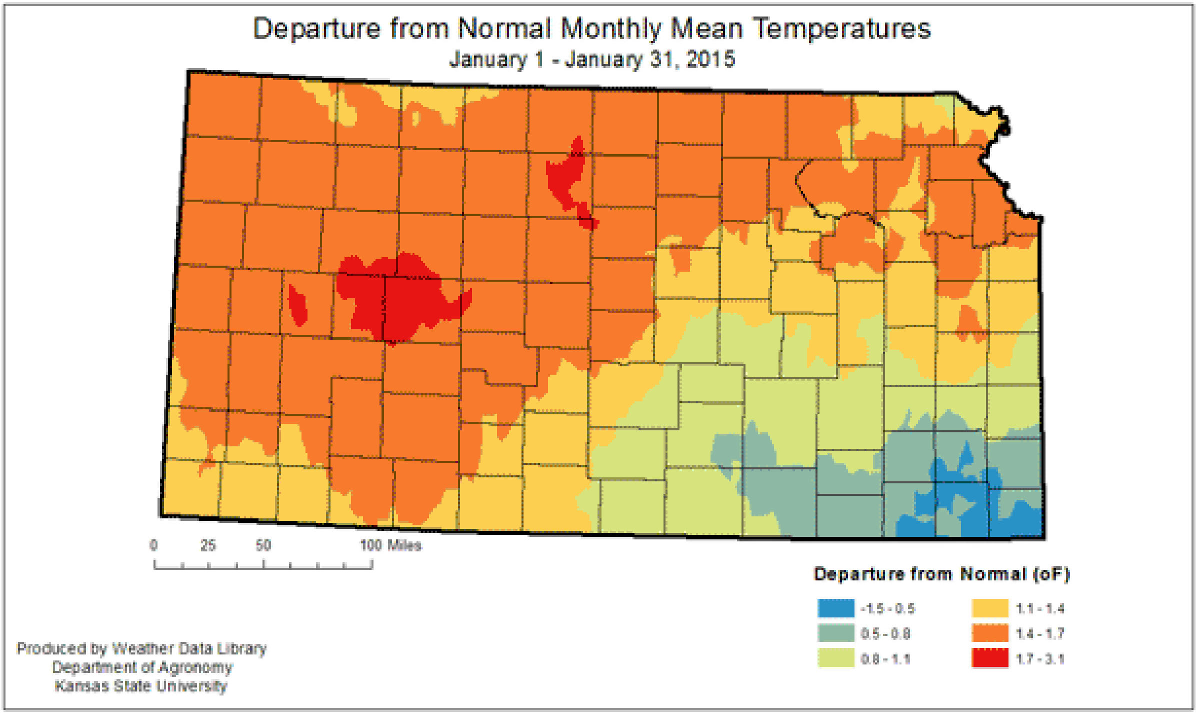
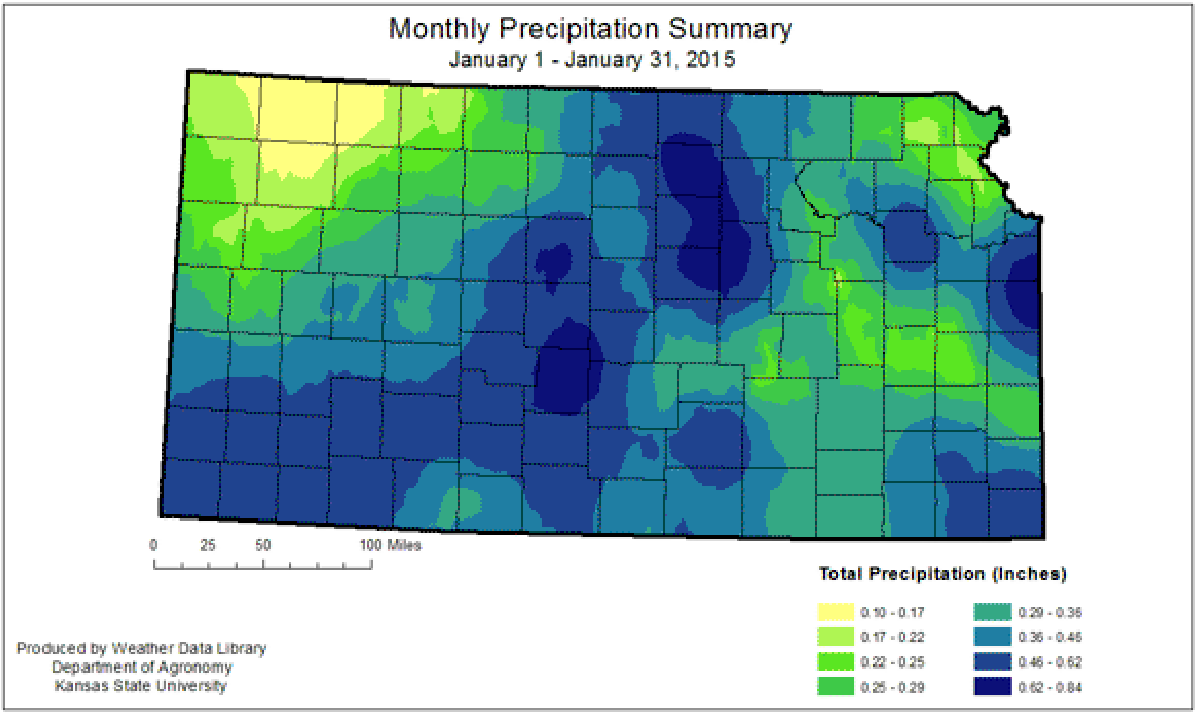
3. Kansas weather summary for January: A roller coaster ride

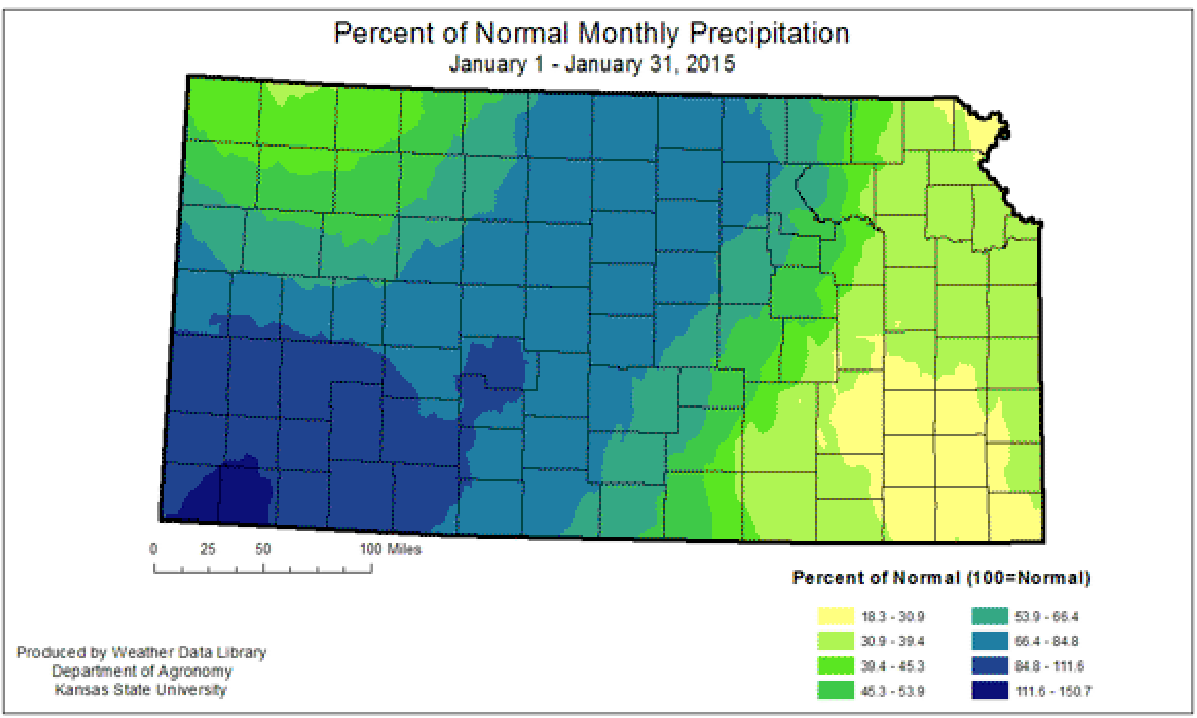
January weather was framed by extremes in Kansas. The month began with much colder-than-normal temperatures and snow. The last half of the month was marked by much warmer- and drier-than-normal conditions. The last two days introduced a return to winter with cold, wet conditions. Statewide temperatures averaged 31.2 degrees F, which was 1.4 degrees warmer than normal. This places it on the warm side of the middle range for January temperatures, as the 40th warmest since 1895. The Southeast Division came closest to average at 32.2 degrees F, or 0.4 degrees warmer than normal. The West Central Division saw the greatest departure. The average temperature for January in that region was 31.8 degrees F, or 2.1 degrees warmer than normal. The warmer-than-average temperatures didn't mean that the month was without cold weather. All divisions reached lows that fell below zero. The coldest reading occurred at the beginning of the month, as an Arctic front issued in the New Year. The coldest reading was a -16 degrees at Brewster, in Thomas County, on the 1st. Sub-zero readings were recorded even in the Southeastern Division, where temperatures dropped to -3 degrees F. The warmest reading for the month was 87 degrees F reported at Great Bend in Barton County, on the 28th. This tied an all-time warmest daily temperature for February in the state. The previous record was set at Hugoton on January 9, 1905. There was only one new record low minimum temperature set. That was the -16 degrees F at Brewster on the 1st.



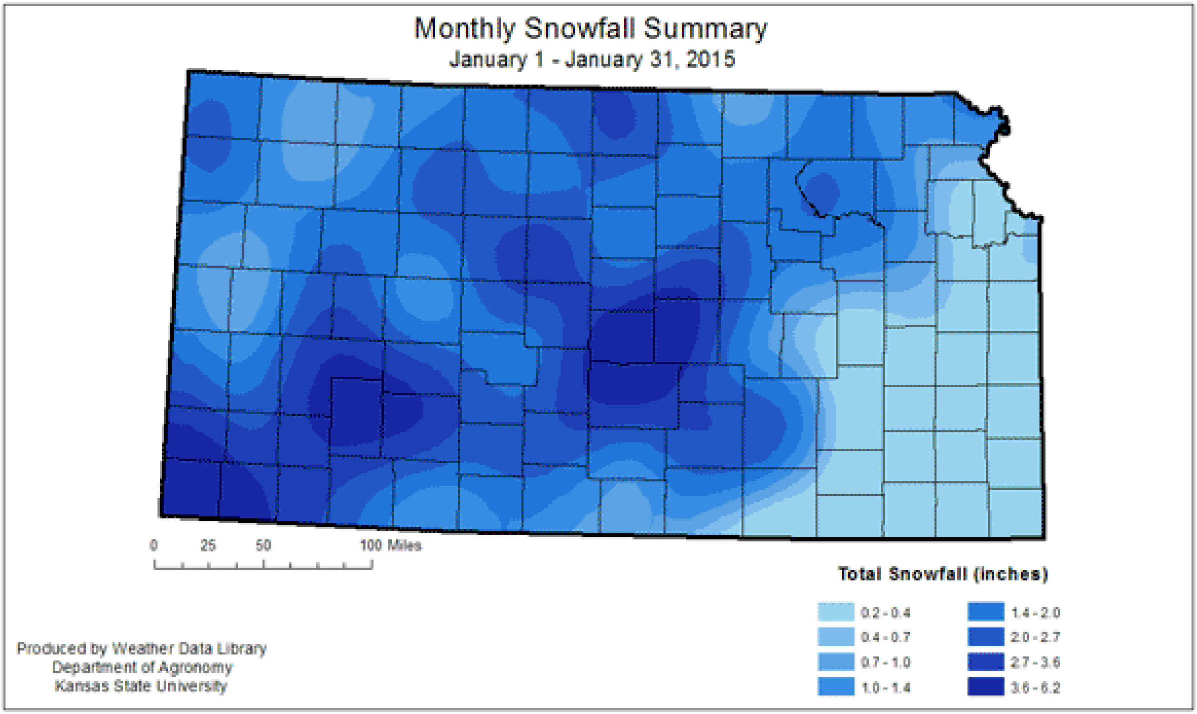


Statewide average precipitation was 0.77 inches which was 99 percent of normal. Fortunately, that deficit equals only 0.02 inches. The Northwest, West Central, South Central, and Southeastern Divisions averaged below-normal for the month. The Northwest had the lowest percentage of normal at 36 percent, which translates to a deficit of 0.29 inches for the month. The Southeast Division had the largest deficit at -0.39 inches, which was 72 percent of normal. The areas with greatest departure from normal only had slight increases. The Central Division had 0.30 inches more than normal, while the North Central Division had 0.26 inches greater than normal. The remaining divisions had less than a quarter of an inch more than normal. The wettest day of the month was on the 31st, when the average reported precipitation was 0.20 inches. The highest monthly total for the National Weather Service was 1.17 inches at the Concordia Airport. The greatest monthly total for the CoCoRaHS network was 1.37 inches at Dodge City.



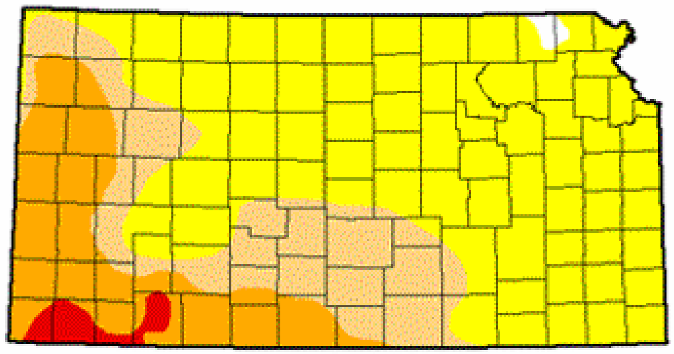


As typical, January was quiet on the severe weather side. There was one snow event, but amounts were generally not troublesome. The highest daily total reported was 5 inches at Elkhart, Morton County on the 5th (NWS) and 7.0 inches at Dodge City 2.7 (CoCoRaHS). Unfortunately, the moisture from the snow was limited.



Drought conditions persist across the state, particularly in the west. There was some degradation in the eastern portions of the state. The drought-free portion of the state shrunk to nearly zero. The wet start to February will bring a brief halt to further deterioration. However, a continued dry pattern is likely to result in a rapid expansion of more severe drought conditions. February marks the beginning of our wetter season, and deficits can accumulate rapidly, particularly in the eastern third of the state. The likelihood of an El Niño/Southern Oscillation (ENSO) continues to diminish. It is still expected to switch to an El Niño event before the end of winter, but it also remains to be seen what impact will be felt. Other global circulation patterns, including the North Atlantic Oscillation (NAO), can have significant impacts on the winter season. The February temperature outlook calls for neutral conditions for most of the state, with warmer-than-normal temperatures for the extreme northwestern areas. The precipitation outlook is also neutral, with precipitation equally likely to be above normal, normal or below normal. This does not indicate how that moisture might be distributed, and means snow events or extended dry periods are both possible.

U.S. Drought Monitor
Kansas



Author:
Brian Fuchs
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

January 27, 2015
(Released Thursday, Jan. 29, 2015)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	0.46	61.89	19.08	16.71	1.88	0.00
Last Week	3.23	59.12	19.08	16.71	1.88	0.00
3 Months Ago	32.99	29.51	18.01	17.23	2.25	0.00
Start of Calendar Year	19.49	43.02	19.18	16.05	2.25	0.00
Start of Water Year	18.51	35.36	26.63	17.13	2.37	0.00
One Year Ago	0.13	36.42	16.83	38.63	7.99	0.00

Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

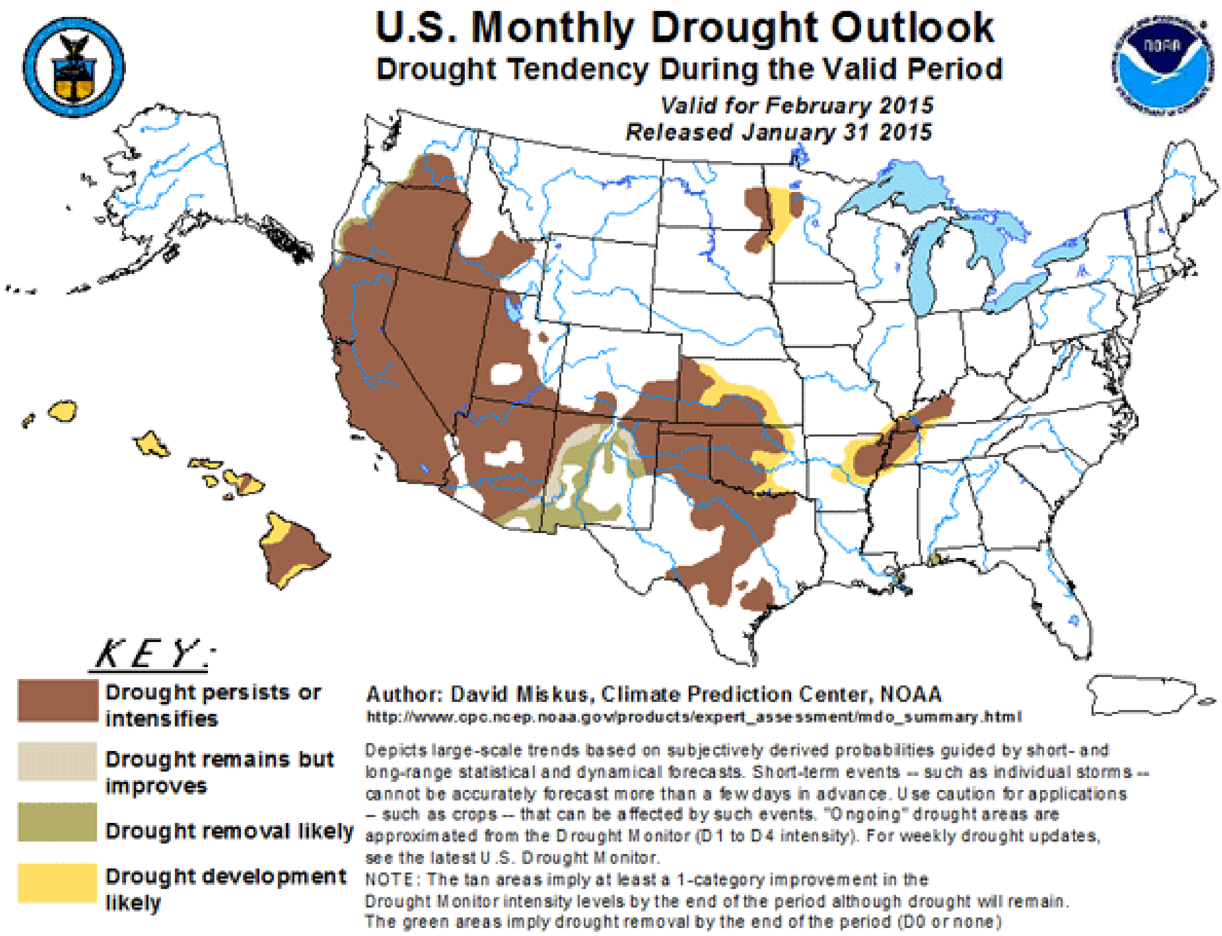


Table 1

January 2015

Kansas Climate Division Summary

	Precipitation (inches)						**Temperature (°F)**			
	As of 1/31/2015			**2015 through January**					**Monthly Extremes**	
Division	**Total**	**Dep.[1]**	**% Normal**	**Total**	**Dep.[1]**	**% Normal**	**Ave**	**Dep.[1]**	**Max**	**Min**
Northwest	0.16	-0.29	36	0.16	-0.29	36	30.0	1.5	83	-16
West Central	0.34	-0.16	63	0.34	-0.16	63	31.8	2.1	83	-8

Southwest	0.53	0.06	115	0.53	0.06	115	33.8	1.7	82	-3
North Central	0.89	0.26	138	0.89	0.26	138	29.6	1.7	83	-6
Central	0.99	0.30	144	0.99	0.30	144	31.3	1.4	87	-6
South Central	0.74	-0.09	88	0.74	-0.09	88	33.2	1.1	83	-3
Northeast	1.03	0.22	132	1.03	0.22	132	28.9	1.4	75	-6
East Central	0.97	0.03	107	0.97	0.03	107	30.3	1.2	79	-8
Southeast	0.86	-0.39	72	0.86	-0.39	72	32.2	0.4	79	-3
STATE	0.72	-0.02	99	0.72	-0.02	99	31.2	1.4	87	-16

1. Departure from 1981-2010 normal value

Mary Knapp, Weather Data Library
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4. K-State Sorghum Production Schools scheduled for mid-February

A series of four K-State Sorghum Production Schools will be offered in mid-February 2015 to provide in-depth training for sorghum producers. The schools will be sponsored by Kansas Grain Sorghum Commission and supported by the Sorghum Checkoff, Sorghum Partners, KFRM 550 AM radio station, and Bayer CropScience (Huskie).

The one-day schools will cover issues facing sorghum producers: weed control strategies, crop practices, soil fertility and nutrient management, insect control, irrigation, and risk management.

The dates and locations are:

- Feb. 10: Garden City, Clarion Inn, 1911 E Kansas Ave.
  Contact information:
  Andrea Burns, Ford County Extension, aburns@ksu.edu 620-227-4542
  Barbara Addison, Finney County Extension, baddison@ksu.edu 620-272-3670
- Feb. 11: Oakley, Buffalo Bill Center, 3083 U.S. 83
  Contact information:
  Julie Niehage, Golden Prairie Extension District, Oakley, julienie@ksu.edu 785-671-3245
- Feb. 12: Hutchinson, Hutchinson Community College, 1300 N Plum St
  Contact information:
  Darren Busick, Reno County Extension, darrenbusick@ksu.edu 620-662-2371
- Feb. 13: Ottawa, Neosho County Community College, 900 E Logan St
  Contact information:
  Darren Hibdon, Frontier Extension District, dhibdon@ksu.edu 785-229-3520

Registration for each school is at 8:30 a.m. The program begins at 9 a.m. and adjourns at 3:30 p.m.

Lunch will be provided, courtesy of the Kansas Grain Sorghum Commission. There is no cost to attend, but participants are asked to pre-register by Feb. 4. Online registration is available at K-State Sorghum Schools (http://bit.ly/KSUSorghum) or by emailing or calling the nearest local K-State Research and Extension office for the location participants plan to attend.

Presentations from the 2014 K-State Sorghum Schools can be seen at:
http://bit.ly/KSUSorghumSchool

For more information, contact: Ignacio Ciampitti, K-State Crop Production and Cropping Systems Specialist, ciampitti@ksu.edu 785-532-6940.

2015 Sorghum Schools

Kansas State University

Department of Agronomy

Kansas Grain Sorghum Commission

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5. Prescribed burning workshops scheduled for February

K-State is conducting several Prescribed Burning Workshops during February. Dates and locations are:

Date	Location	Address	Time	Contact
Feb. 9	Alta Vista	Baptist Church, 402 Main	10 a.m.	Kara Mayer Wabaunsee Co. Ext. 785-765-3821
Feb.11	Westmoreland	Sunflower Room Extension Office, 612 Campbell	10:30 a.m.	Austin Sexten Pottawatomie Co. Ext. 785-457-3319
Feb.11	Russell	4-H Building, 702 Fairway Drive	10 a.m.	Dusti Lynn Betts Midway District Ext. 785-483-3157
Feb.18	Scott City	WM Carpenter 4-H Building, 608 N Fairground Road	Noon	John Beckman Scott Co. Ext. 620-872-2930
Feb.23	Howard	Ext. Meeting Room, 130 S. Pennsylvania	10 a.m.	Richard Fechter Rolling Prairie Dist. Ext. 620-515-0149
Feb.24	Larned	J.A. Haas Exhibit Building, 400 E. 18th Street	9 a.m.	Jess Crockford Kansas Prescribed Fire Council 620-664-4882
Feb.25	Pratt	4-H Building, 61 Lake Road	10 a.m.	Zac Eddy Pheasants Forever 620-549-3480 x110
Feb.25	Osage City	Old Depot, 504 Market Street	10 a.m.	Rod Schaub Osage Co. Ext. 785-828-4438
Feb. 26	Jewell	Community Center, Delaware Street, Hwy 28	10 a.m.	John Forshee River Valley Dist. Ext. 785-632-5335
March 5	Viola	WSU Field Station, 28900 West 87 Street South	9 a.m.	Jess Crockford Kansas Prescribed

				Fire Council 620-664-4882

Each meeting normally lasts about 5 hours. There may be a charge for materials and lunch. People will need to contact those listed in the chart above to ask about charges.

Walt Fick, Rangeland Management Specialist
whfick@ksu.edu

6. K-State Canola Risk Management Schools scheduled for March 5 and 10

Winter canola has proven to be a profitable crop for producers in Kansas in recent years, leading to an exciting future and a need for further education.

Year after year, producers in Kansas continue to plant record acres indicating strong interest in winter canola as a rotational crop. At K-State Research and Extension, we are committed to providing both new and experienced producers the tools necessary to manage the agronomics and marketing of winter canola.

Producers will have the opportunity to learn more about successful winter canola production practices and risk management at two production schools in March.

Topics will include stand establishment; planting date; fertility; variety selection; winter survival; pest, disease, and weed control; harvest management; insurance; and marketing.

Dates and locations in Kansas include:

March 5 – Concordia, Heavy's BBQ meeting room, 103 W. 7th St. 10 a.m. Lunch will be sponsored by Wilbur-Ellis. RSVP to the Cloud County Extension office 785-243-8185 by Monday, March 2.

March 10 – Kingman, Kingman County Activities Center; 10 a.m. Lunch will be sponsored by American Ag Credit. RSVP to the Kingman County Extension office 620-532-5131 by Friday, March 2.

The schools are free and open to the public. To ensure adequate food and program materials are available, the organizers are requesting that participants pre-register.

Risk management schools fulfill the requirements of the USDA-Risk Management Agency sponsored project "Extending Risk Management Education to New and Experienced Canola Producers in Kansas and Colorado."

Mike Stamm, Canola Breeder
mjstamm@ksu.edu

7. Comparative Vegetation Condition Report: January 20 - February 2

K-State's Ecology and Agriculture Spatial Analysis Laboratory (EASAL) produces weekly Vegetation Condition Report maps. These maps can be a valuable tool for making crop selection and marketing decisions.

Two short videos of Dr. Kevin Price explaining the development of these maps can be viewed on YouTube at:
http://www.youtube.com/watch?v=CRP3Y5NIggw
http://www.youtube.com/watch?v=tUdOK94efxc

The objective of these reports is to provide users with a means of assessing the relative condition of crops and grassland. The maps can be used to assess current plant growth rates, as well as comparisons to the previous year and relative to the 26-year average. The report is used by individual farmers and ranchers, the commodities market, and political leaders for assessing factors such as production potential and drought impact across their state.

NOTE TO READERS: The maps below represent a subset of the maps available from the EASAL group. If you'd like digital copies of the entire map series please contact Nan An at nanan@ksu.edu and we can place you on our email list to receive the entire dataset each week as they are produced. The maps are normally first available on Wednesday of each week, unless there is a delay in the posting of the data by EROS Data Center where we obtain the raw data used to make the maps. These maps are provided for free as a service of the Department of Agronomy and K-State Research and Extension.

The maps in this issue of the newsletter show the current state of photosynthetic activity in Kansas, the Corn Belt, and the continental U.S., with comments from Mary Knapp, service climatologist:

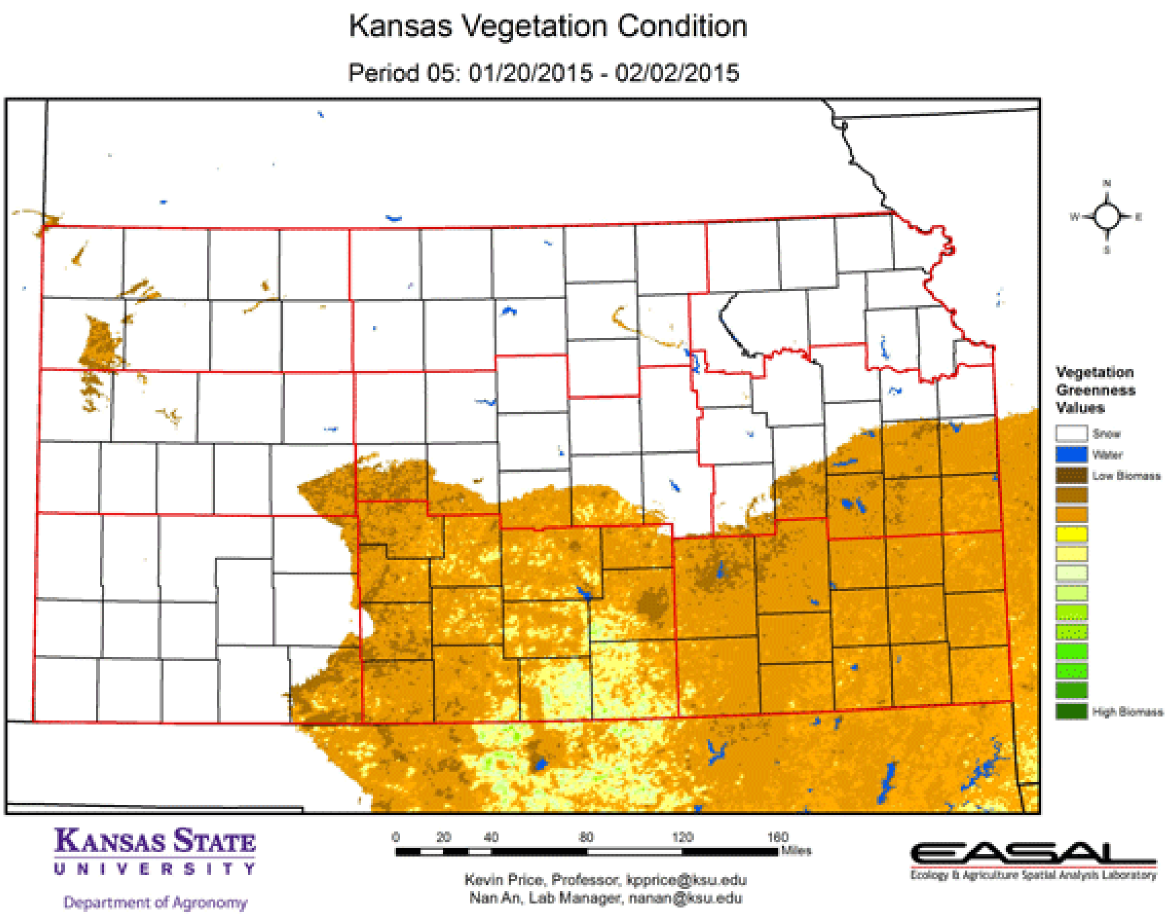

Figure 1. The Vegetation Condition Report for Kansas for January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the south central and southeastern parts of the state missed on the snow. Warmer-than-average temperatures for the period resulted in much of the moisture coming as rain.

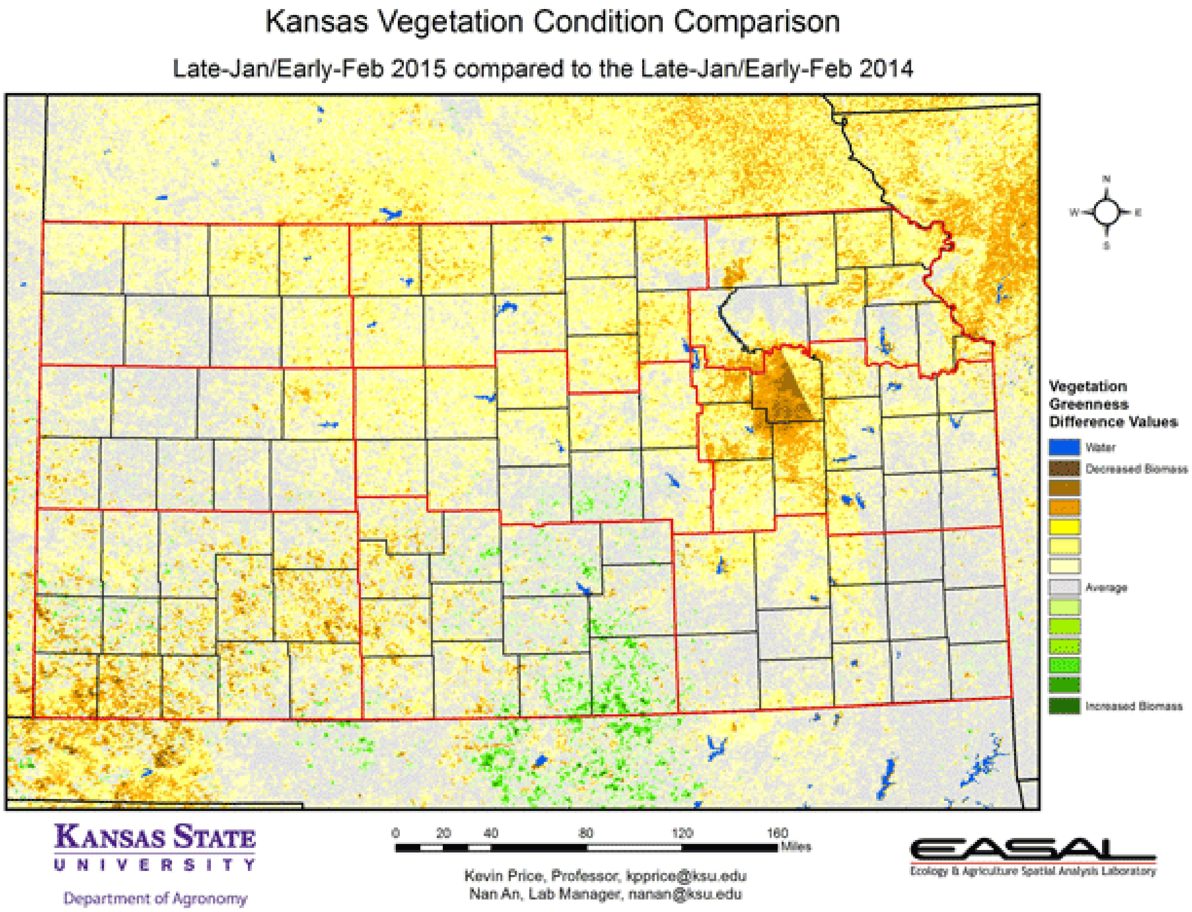

Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that there is a splice line over Wabaunsee County giving the appearance of much lower NDVI values than is actually the case. Vegetative activity is slightly lower than last year, due to snow cover in the area.

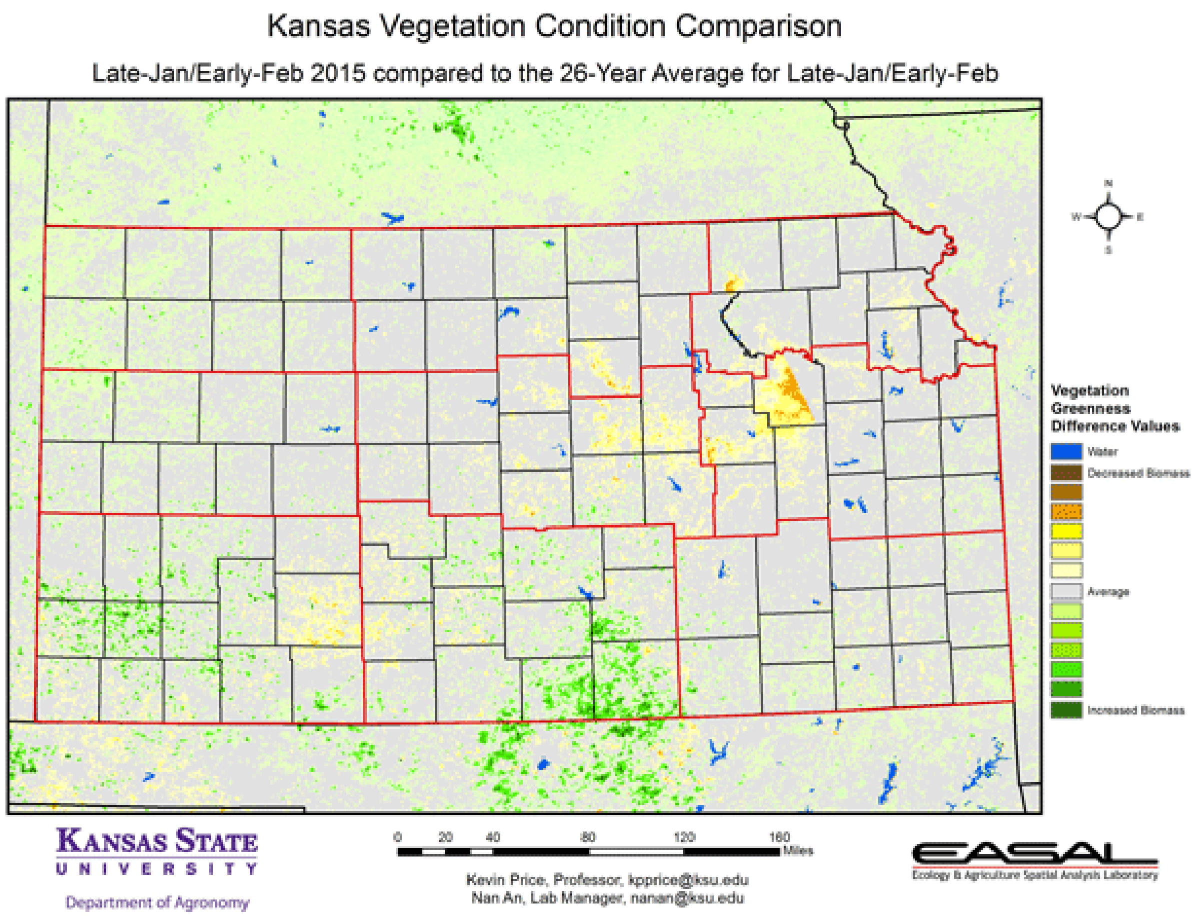

Figure 3. Compared to the 26-year average at this time for Kansas, this year's Vegetation Condition Report for January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that south central Kansas has the greatest increase in NDVI readings. This is particularly true in Sumner and Harper counties, where mild temperatures and above normal moisture favored above-average photosynthetic activity.

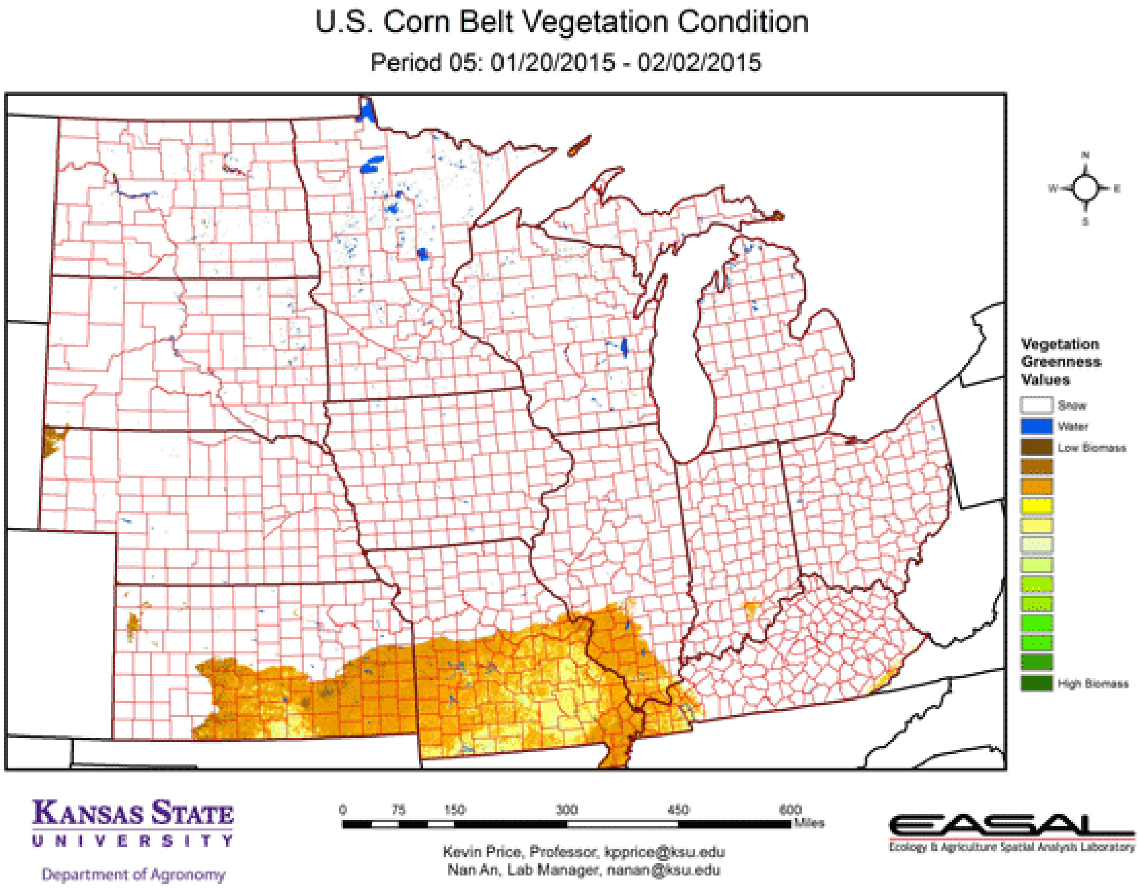

Figure 4. The Vegetation Condition Report for the Corn Belt for January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that only a small portion of the region centered on southern Missouri missed on the snow cover. Most vegetation is still dormant.

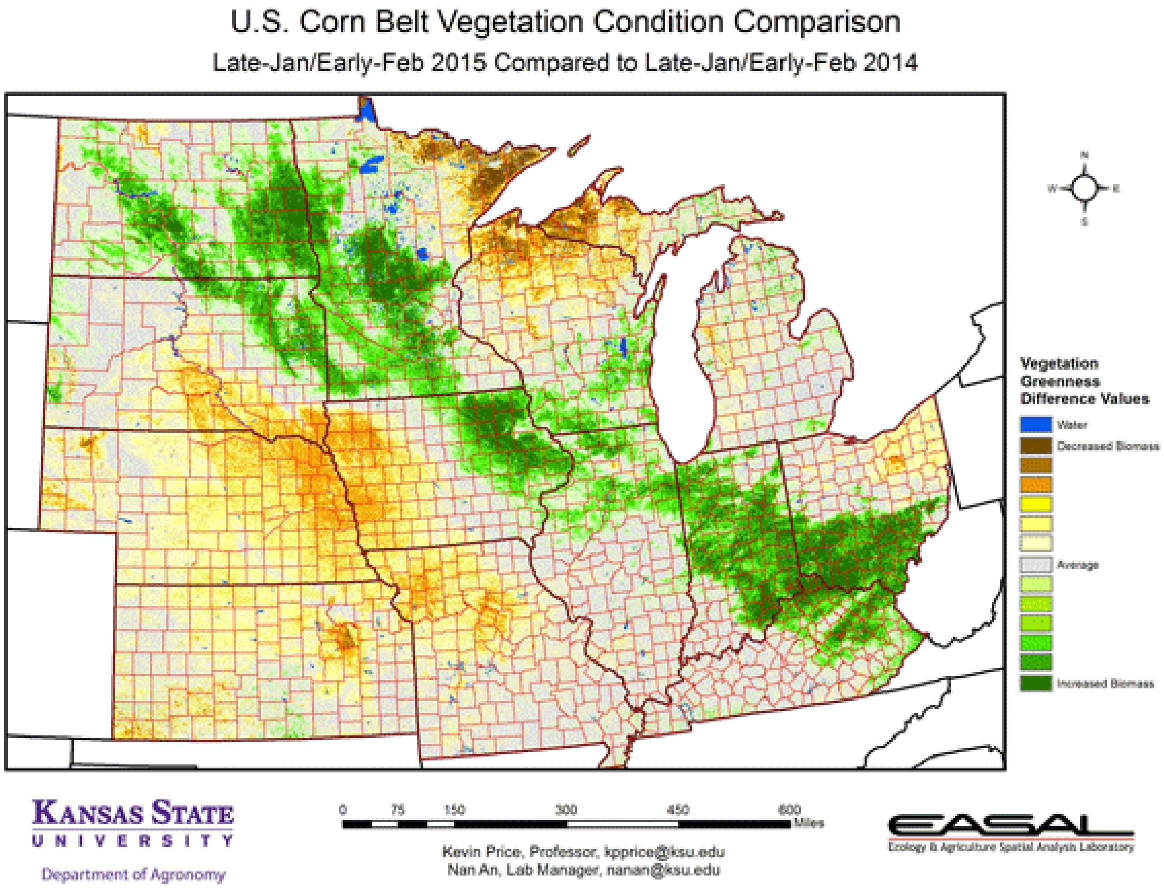

Figure 5. The comparison to last year in the Corn Belt for the period January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows an area from southeastern North Dakota through southern Ohio with much higher NDVI values. This is largely due to much lower snow cover in this region compared to last year. The greatest snow depth for the period at Columbus, Ohio was 6 inches last year. This year the greatest snow depth during the period was only 3 inches.

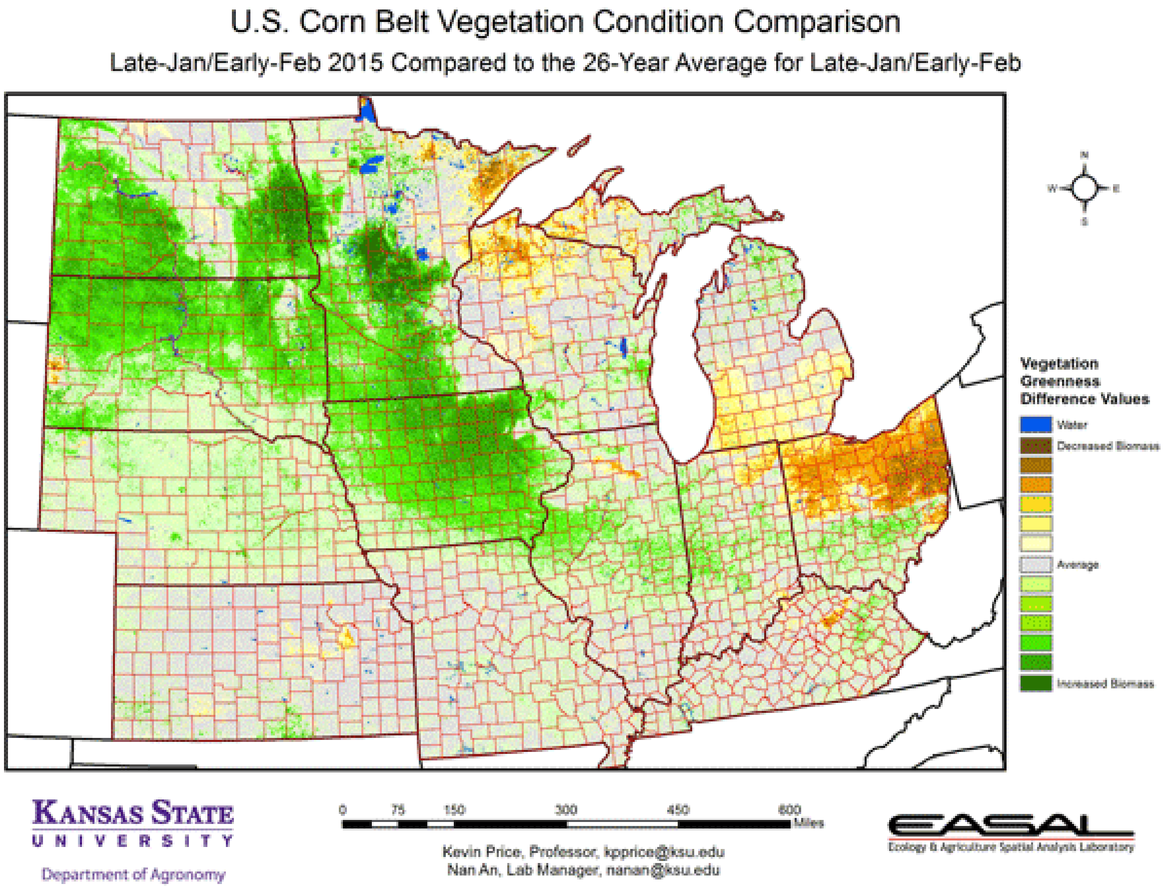

Figure 6. Compared to the 26-year average at this time for the Corn Belt, this year's Vegetation Condition Report for January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the lack of snow cover continues to result in above-average NDVI readings. In contrast, northern Ohio, which has had higher snowfall, also has below-average NDVI readings.

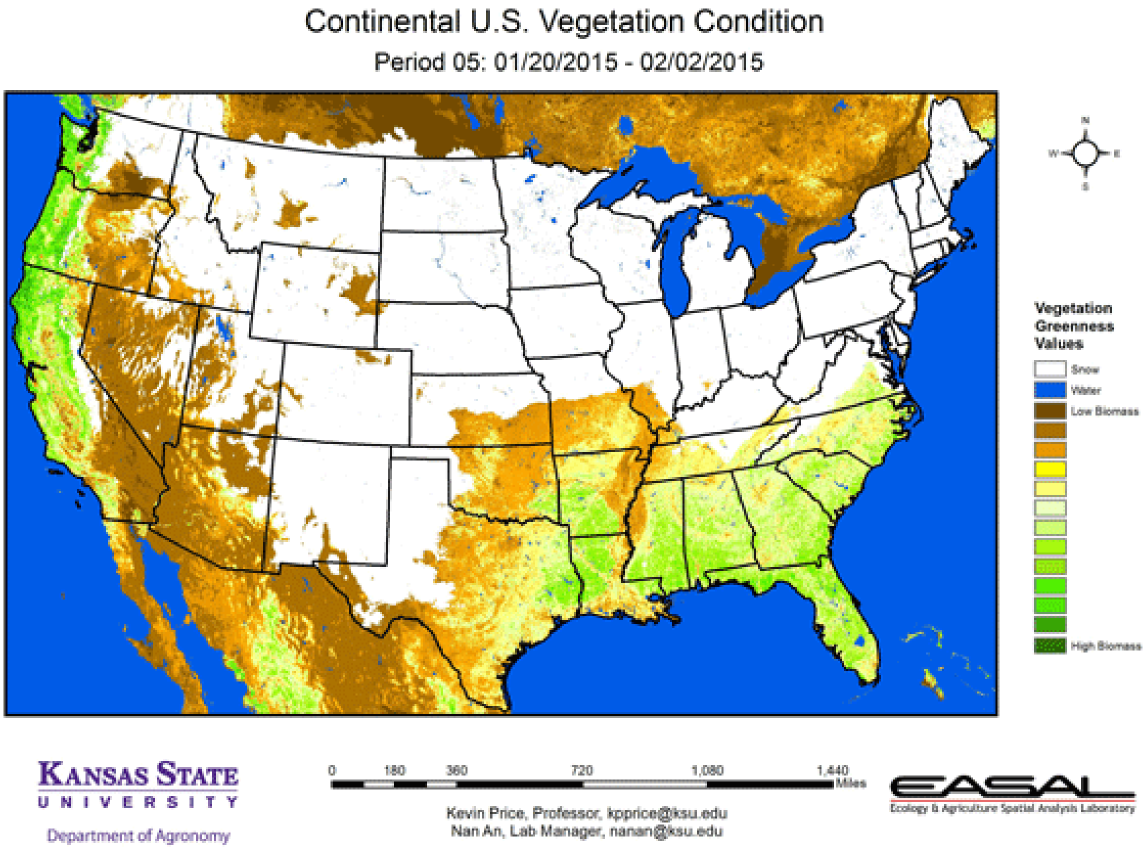

Figure 7. The Vegetation Condition Report for the U.S. for January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the Southern Rockies into the Texas Panhandle continues to have snow, while the mountains of the Pacific Northwest continue to miss out.

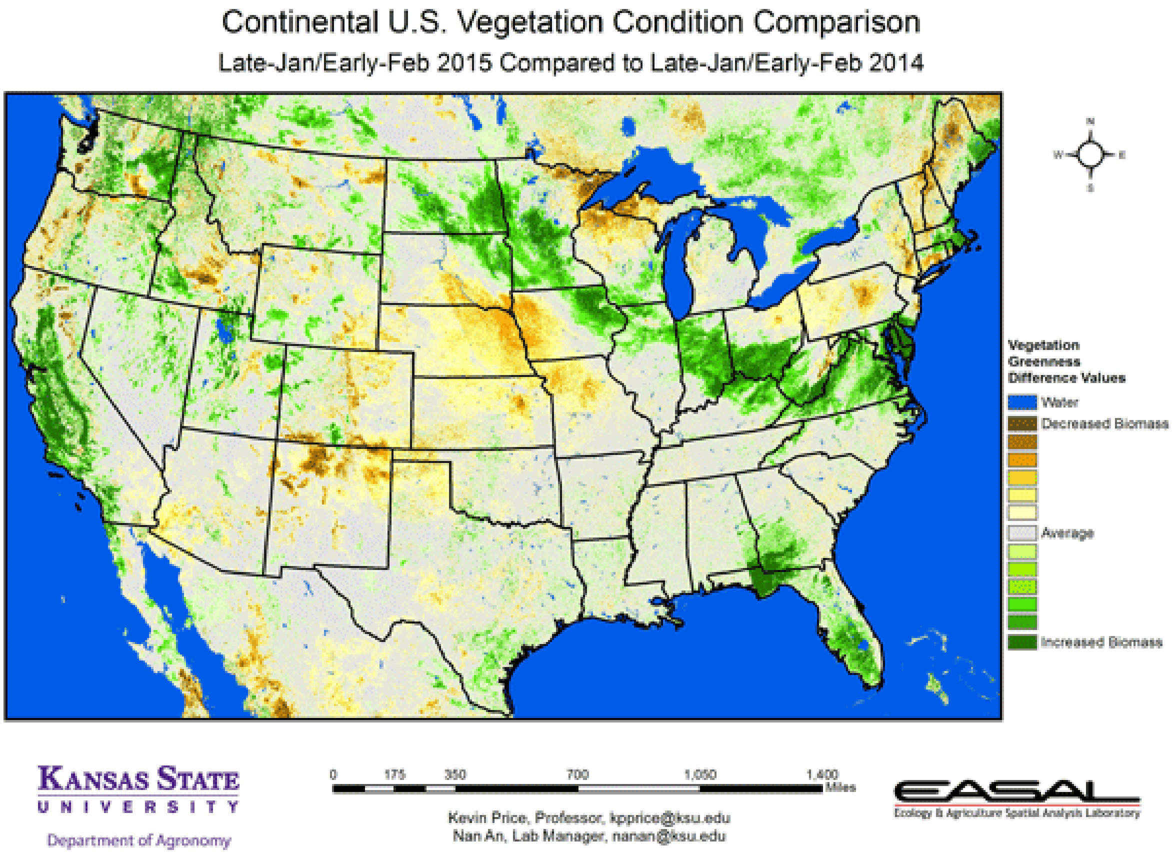

Figure 8. The U.S. comparison to last year at this time for the period January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that higher NDVI readings are most visible along the Upper Midwest and through Central California. This is largely due to lack of snow in these areas, and is an ongoing concern for worsening drought in the regions.

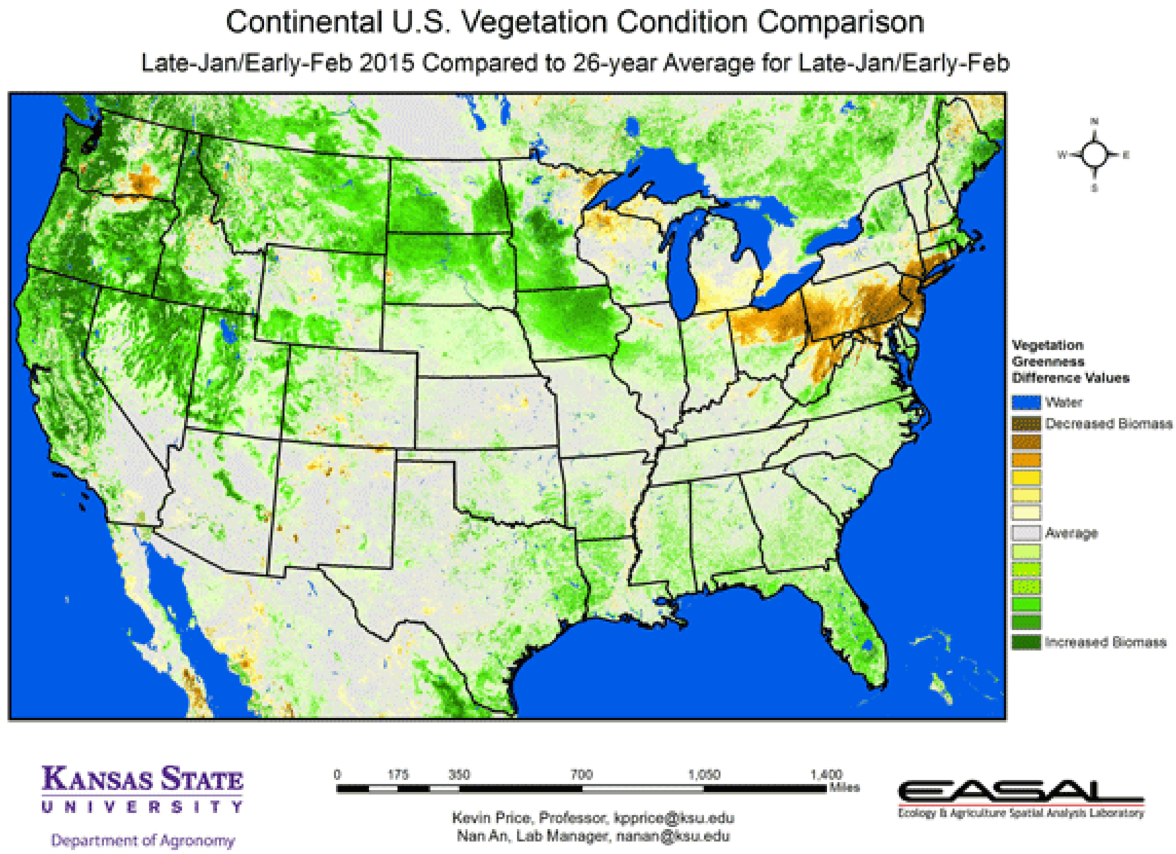

Figure 9. The U.S. comparison to the 26-year average for the period January 20 – February 2 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that from the Pacific Northwest through the Northern Plains there is much higher-than-normal NDVI readings. Lack of snow, which provides runoff through the summer, is of increasing concern. The lower-than-normal NDVI values from northern Ohio east to the New Jersey shore are an indication of higher-than-normal snow levels. Flooding is an ongoing concern in these areas.

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