Issue 610

K-STATE
Research and Extension

Extension Agronomy

eUpdate

02/03/2017

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, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Plan now for good marestail control in soybeans

Controlling glyphosate-resistant marestail in soybeans continues to be a big challenge for Kansas no-till producers. Because soybeans are generally planted later in the season, and marestail generally germinates in the fall or early spring, application timing and weed size are critical factors to successful control.

Figure 1. Glyphosate-resistant marestail in soybeans. Photo by Dallas Peterson, K-State Research and Extension.

In the early spring, using a growth regulator herbicide such as 2,4-D and/or dicamba is an inexpensive and effective option to control rosette marestail. Dicamba has provided better control than 2,4-D and will also provide some residual control, especially at higher use rates. A combination of the two will give broader spectrum weed control than either one alone. Recent observations in Kansas suggests marestail will bolt in April throughout most of the state, so timing control before the end of March is recommended.

In addition, using a herbicide with longer residual control of marestail helps with weeds that germinate between treatment and soybean planting. Products that include Canopy EX, Autumn Super, Classic, FirstRate, Sharpen, metribuzin, or Valor can help provide residual control against several broadleaf species including marestail. However, it is very important to consult and follow the herbicide label guidelines for the required preplant intervals prior to planting soybeans.

As soybean planting nears, existing marestail plants can become difficult to control because plants will have bolted and be considerably larger. Herbicides to apply as a burndown prior to planting include tank mixes of glyphosate with FirstRate, Classic, Sharpen, Optill, or 2,4-D. Be very careful to follow label directions when using 2,4-D prior to soybean planting. The plant-back restriction ahead of soybean can range from 7-30 days depending on rate and formulation. Sharpen generally provides good marestail control and can be applied any time before soybean emergence. However, it is still most effective if applied before marestail starts to bolt, in a tank-mix with other herbicides, when used with methylated seed oil, and at spray volumes of 15 gallons per acre or more.

Preplant restrictions for dicamba products such as Clarity, Banvel, and others range from 14 to 30 days depending on product, application rate, rainfall amounts, and geography. However, with the introduction of Xtend soybeans, the new dicamba products Xtendimax and Engenia have no preplant interval restrictions applied ahead of Xtend soybeans and should be some of the more effective treatments for marestail control in that scenario. Xtendimax and Engenia are still most effective prior to bolting of the marestail.

One additional herbicide to consider as a rescue burndown application to control bolting marestail prior to soybean planting is Liberty. Although, it would be better to control marestail at an earlier stage of growth, Liberty has been one of the most effective herbicides to control bolting marestail. Liberty also has broad spectrum non-selective activity on other broadleaf and grass species if treated at a young growth stage. Liberty is primarily a contact herbicide, so a spray volume of 15 gallons per acre or greater generally provides the most consistent weed control. Liberty tends to work best under higher humidity and warm sunny conditions at application.

Controlling marestail in the growing soybean crop can be the biggest challenge for producers. Glyphosate alone is often not effective on larger plants or glyphosate-resistant marestail. The most successful treatments for large marestail in Roundup Ready soybeans have been with combinations of glyphosate + FirstRate, glyphosate + Classic, or glyphosate + Synchrony. However, some marestail may also be resistant to Classic, FirstRate, and Synchrony and control may be marginal.

If Xtend soybeans are planted, Xtendimax and Engenia should be some of the most effective herbicides for postemergence control of marestail in soybeans. Remember that Xtendimax and Engenia can only be applied to Xtend soybeans.

Another option to control marestail in soybean is to plant Liberty Link soybeans and use Liberty herbicide. It is important to remember that Liberty can only be applied postemergence on Liberty Link soybeans.

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2. Precision nitrogen management for wheat in Kansas using optical sensor technology

Long-term research has indicated that the optimum nitrogen (N) rate for winter wheat in Kansas shows a high year-to-year and site-to-site variability, ranging from zero to more than 120 pounds of N per acre depending on growing season conditions (Figure 1). The high variability in optimum N rate is mostly led by weather conditions during the growing season (such as precipitation distribution), residual nitrate in the profile at sowing time, N mineralization rates (affected by temperature and precipitation regimes), and differences in soil characteristics and cropping systems/rotations. Therefore, optimum N rate is highly unpredictable, and using the same flat rate of N fertilizer every year can result in either over- or under-fertilization.

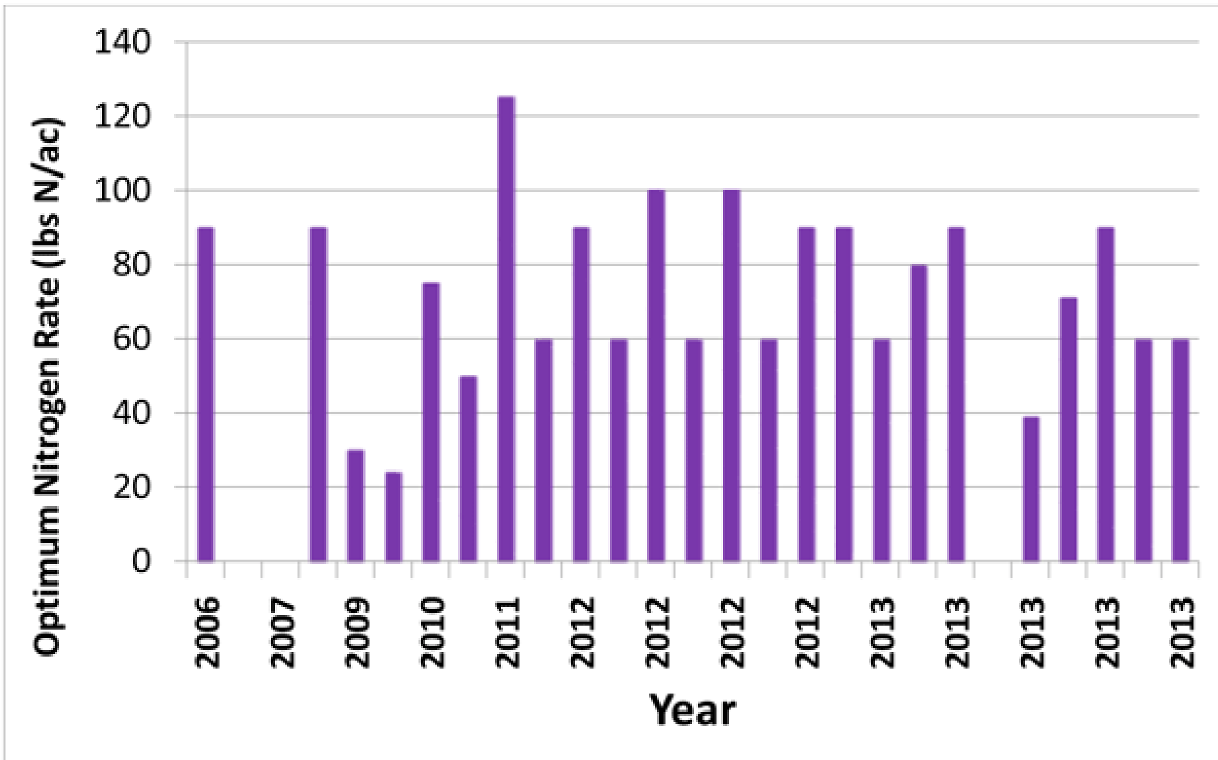

Figure 1. Optimum nitrogen rate for winter wheat in Kansas for several trials during the 2006 – 2013 period. Graph generated with information collected by Ray Asebedo, K-State Research and Extension.

In-season estimation of N needs

To help set the right N rate based on current growing season conditions, one tool growers can use is either an active optical sensor, such as the Topcon Cropspecs, Ag Leader OptRx, or Trimble GreenSeeker (Figure 2); or a multispectral imager such as the MicaSense RedEdge (Figure 3). These can be very useful tools to help assess the N needs of a growing wheat crop between spring tillering

(Feekes 3-4) and flag leaf emergence (Feekes 9). The investment necessary when adopting this technology ranges from $500 (handheld device used without mounting in any structure, Figure 3), to $10,000 for a MicaSense Rededge and a UAV (Figure 3), to more than $20,000 if the producer is interested in mounting multiple sensors (plus cables and processors) on a ground rig and performing on-the-go variable rate N application (Figure 2).

Figure 2. Topcon Cropspecs mounted to John Deere 4052r (top), Ag Leader OptRx sensor mounted on boom (bottom left), and Trimble GreenSeeker handheld sensor (bottom right). Photos by Ray Asebedo, K-State Research and Extension.

Figure 3. Using handheld Holland Scientific Rapidscan prior to topdressing wheat (top, photo by Dave Mengel, K-State Research and Extension) and MicaSense mounted to DJI S800evo prior application (bottom, photo by Ray Asebedo, K-State Research and Extension).

How do optical sensors work?

Optical sensors are generally categorized into two categories: active and passive. While it's not absolutely necessary to understand the science behind optical sensors in order to be able to use them in the field, it is interesting and helpful.

Both types of optical sensors detect light reflectance; however, the defining factor is their light source. Active optical sensors have their own internal light source and do not require the sun to illuminate the crop. Therefore, they can operate under any kind of sky condition. Passive optical sensors such as cameras or multispectral imagers rely on sunlight to illuminate the crop. Therefore, they are more sensitive to changing sky conditions and the time of day they are used. The most common wavelengths of light used by optical sensors is near infra-red (NIR) and red. The reflectance of these wavelengths is often used in the normalized difference vegetation index (NDVI) to assess crop health:

NDVI = NIR - red

NIR + red

Light in the red band is directly used by plants for photosynthesis; thus, lower reflectance rates on that band means there is more absorption -- and more healthy chlorophyll is present in the wheat canopy. NIR light strongly interacts with spongy mesophyll cells in the plant, therefore more NIR light is reflected back to the optical sensor with increasing plant biomass. So in a sense, a red NDVI gives the farmer information on how big and efficient their wheat crop is in working to produce yield.

Lush canopies will reflect less on the red and more on the NIR, resulting in high NDVI values and lower N requirements. Likewise, thin canopies will reflect more in the red and less on the NIR, resulting in low NDVI values and greater N requirements (Fig. 4).

Figure 4. Difference in NDVI as affected by canopy cover at a similar wheat growth stage (Feekes 4). Photo by Ray Asebedo, K-State Research and Extension.

Optical sensors provide a reading for the wheat crop's NDVI, but do not perform the N recommendation. The NDVI measurement is then entered as input in algorithms generated based on research, which provide the actual N recommendation. Without a good algorithm, the sensors simply provide a number that quantifies wheat growth. Recent studies focused on evaluating the performance of ground- and UAV-mounted optical sensors in managing N on winter wheat using NDVI-based N recommendations developed at K-State.

Does the technology pay off?

We conducted a research project at eight locations around Kansas in 2014-15 and five locations in 2015-16, comparing the value of using soil testing or crop sensors in making N recommendations.

Treatments in this project included increasing N rates of 0, 25, 50, 75, 100, and 125 lbs N/acre; an N rate based on K-State's standard N recommendation formula with soil test data; and N rates based on K-State's new N recommendation formula using optical sensor data from either a single pass at Feekes 4 or two passes at Feekes 4 and 7. Performance of these treatments was compared using grain yield and agronomic efficiency.

$$Agronomic\ Efficiency = \frac{(Treatment\ Yield - 0\ N\ Check\ plot\ Yield)}{Nitrogen\ Rate\ Applied}$$

K-State research results

In most cases in these tests, K-State's sensor-based N fertilization recommendations were lower than N recommendations using K-State's standard N rate recommendation formula with soil test data. More importantly, the lower N rate recommendations from the sensor-based technology did not limit wheat yields. However, the yield response will depend on environmental conditions at time of N application and at time of grain yield formation. For instance, if N rates are decreased and followed by near-perfect weather conditions for grain fill, K-State's sensor-based N management might leave some yield on the table compared to what would have occurred with higher N rates.

For normal growing conditions experienced in the great majority of the studied cases and most years in Kansas, N rates can be based on optical sensor readings at Feekes 4, or Feekes 4 and 7, using K-State's algorithms -- and N rates can be decreased if the sensor readings call for less N than the recommendation from the standard K-State N recommendation formula -- without limiting grain yields. More detailed information about the results obtained in this study is provided in the following paragraphs.

The 2014-15 growing season was extremely dry until early May, with very limited organic matter mineralization up to then. Under these conditions, where yield goal recommendations were made in the absence of soil test information, the normal recommendation averaged 78 pounds N per acre across the eight sites. Adding the results from fall or winter profile soil tests into the standard K-State N recommendation equation reduced the average N recommendation across these sites by 24 pounds per acre to 54 pounds per acre (the soil test information actually increased the N recommendation at one location).

Using a crop sensor-based N management system at Feekes 4, shortly after greenup, further reduced the N recommendations by an additional 10 pounds per acre to an average of 44 pounds N per acre. Using the sensor twice, shortly after greenup and at second joint, N rates were reduced another 17 pounds per acre to a total of 27 pounds of total spring N. How did the yields turn out? The average yield across the sites was 52 bushels per acre, and ranged from 27 to 73 bu/acre. There was virtually no response to N rate at most sites, with only one of the 8 sites showing a clear statistically significant response to N. In other words, reducing N rates by using active sensors and K-State's algorithms did not result in yield loss by the producer, saving input costs and increasing overall profitability.

During the 2015-16 season, spring precipitation started earlier (approximately mid-April for most of the state), and grain filling conditions were near optimal (cool and moist). Under these high-yielding conditions, a greater response to N rates was observed. For instance, the Clifton location responded well to N applications, with grain yield increase continuing up to 125 lb N/acre (although not statistically significant beyond 75 lb N/acre). The K-State N recommendation generated from using a single optical sensor reading at Feekes 4 was lower than the N recommendation from the standard K-State recommendation formula using soil test data. Grain yields were statistically equal at the two different N rates, meaning the N rate from the optical sensor readings had greater agronomic efficiency. The best performance in regards to grain yield and agronomic efficiency occurred with the K-State N recommendation generated by optical sensor when used at both Feekes 4 and Feekes 7, and with two topdress applications. This two-pass approach using optical sensor technology reduced total N rates by about half while maintaining statistically equal grain yield to the soil-test-based K-State N recommendation.

Wheat protein content

Currently, K-State also has algorithms developed to fertilize for high-yield and high-protein wheat using active sensors. In cases in which producers are compensated for high-protein wheat, such as when marketing directly to specific mills that pay a premium for protein content, producers can consider this option. However, fertilizing for high-protein will not be profitable if producers do not get a premium for it. Still, it is important to consider the overall quality of wheat production in Kansas as a whole, maintaining minimum protein levels of the market class. While decreasing N rates might be tempting, especially in years when the commodity prices are low, the market might practice a discount for low protein hard red winter wheat, also affecting producer's profitability. On a larger scale, the market might avoid buying wheat from regions known for low protein content; thus, it is not recommended to decrease N rates to levels which might result in protein contents below approximately 12.5%.

Preliminary conclusions

All results shown above are in line with years of previous research conducted in both Kansas and neighboring states, such as Oklahoma, which indicates that in most cases the use of optical sensors to manage wheat N rate results in reduced N application without a consequent reduction in wheat yields. Some years the sensor-based N management will leave yield on the table by reducing N rates; and in a few years it will overestimate N needs. However, our results allow us to conclude that in most years, sensor-based N management reduces N rates and maintains wheat yield in Kansas.

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3. Prescribed Burning Workshops scheduled for 2017

Four Prescribed Burning Workshops are scheduled for the remainder of the winter in Kansas, with the possibility of more upon request.

The agencies involved include K-State Research and Extension, USDA-NRCS, USDA-FSA, Kansas Department of Wildlife, Parks & Tourism, and the National Weather Service. Each workshop lasts about 4 hours. Topics include, reasons for burning, regulations, weather considerations, liability, burn contractors, equipment and crew, hazards, fuels, firebreaks, fire types and behavior, ignition techniques, and burn plans. Attendees have the opportunity to talk through specific burn scenarios with the presenters.

Contact Walt Fick at 785-532-7223 or whfick@ksu.edu if you would like to host a prescribed burning workshop.

Workshop	Date (2017)	Location	Host	Agency	Phone	email
Jeffrey Energy Center	Feb. 16	Jeffrey Energy Center	J.R. Glenn	Westar	785-575-6518	jr.glenn@westarenergy.com
Edwards	Feb. 21	Kinsley	Jess Crockford	KPFC	620-664-4882	jbcrock@sbcglobal.net
Frontier District	Feb. 22	Ottawa	Rod Schaub	K-State	785-828-4438	rschaub@ksu.edu
Southwind District	March 1	Uniontown	Chris Petty	K-State	620-223-3720	cgp@ksu.edu

Walt Fick, Range Management Specialist
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4. K-State Agriculture Technology Days, Feb. 9-10, Great Bend and Beloit

Keep your farming operation up-to-date and efficient by attending K-State Research and Extension's "Agriculture Technology Days," hosted by Barton County Extension and the Post Rock Extension District.

The first meeting will be Thursday, Feb. 9 in Great Bend at the Recreation Center. The second date will be Friday, Feb. 10 in Beloit at the NCK Technical College. The meetings will begin at 9:20 a.m. and will conclude at 2:00 p.m. The program is the same both days.

9:20 a.m. Welcome and Sign-in

9:30 a.m. Big Data Implications for Farmers – Terry Griffin, Agricultural Economics

10:10 a.m. N Management Using Green Seeker – Romulo Lollato, Wheat and Forages Specialist

10:50 a.m. Planting Technologies: High Speed Planter in Corn – Ajay Sharda, Biological and Agricultural Engineering

11:30 a.m. Lunch

12:00 p.m. Brian McCornack Data Integration Using myFields.info – Brian McCornack, Entomology

12:40 p.m. Use of Satellite Imagery for Forecasting Corn Yield Monitor Data – Ignacio Ciampitti, Crop Production and Cropping Systems Specialist

1:20 p.m. Collecting and Using Yield Monitor Data – Lucas Haag, Northwest Area Crops and Soils Specialist

2:00 p.m. Adjourn

A free lunch meal will be served at each of the sites, courtesy of sponsors CropQuest, Kansas Corn, First Kansas Bank, Plains State Bank, Simpson Farm Enterprises, Inc., and The Guaranty State Bank & Trust.

There is no cost for either meeting. However, RSVP is requested by Monday, February 6, for both meetings. Please RSVP to:
Barton County Extension -- Alicia Boor aboor@ksu.edu 620-793-1910
Post Rock Extension District Offices in Beloit, Lincoln, Mankato, Osborne or Smith Center, or Sandra L. Wick swick@ksu.edu 785-282-6823

Online registration is also available at Barton County Extension (www.barton.ksu.edu) and Post Rock Extension District (www.postrock.ksu.edu) websites. Twenty registered participants will be needed at each site to host the meetings.

5. Western Kansas Forage Conference planned Feb. 20 in Larned

Jeff Rasawehr, of Celina, Ohio, and co-founder of Cover Crop Ranch, will present "Making a Cover Crop Your Most Valued Crop" at the Western Kansas Forage Conference on Feb. 20.

Sponsored by K-State Research and Extension and the Kansas Forage and Grassland Council, the conference will be at the J.A. Haas Building, 400 E. 18th St. in Larned, Kansas. Registration begins at 8:30 a.m., with the program from 9 a.m. - 3 p.m.

Cover Crop Ranch is a network of farms in Michigan and Ohio using sustainable farming practices of no-till, cover crops and a system called mob grazing to produce meat. Mob grazing involves moving cattle at least daily between small enclosures and split by electric fences. The plants in the enclosure are eaten, walked on and trampled, then allowed to rest for 60-120 days or more.

Rasawehr will share his knowledge and experience in using cover crops and making them valuable in a crop production system.

Other conference speakers and topics include:

- Soil Management with Cover Crops – DeAnn Presley, K-State soil management specialist
- What Are We Learning from Integrating a Cover Crop into our Production Practice? – Dale Younker, U.S. Department of Agriculture soil health specialist
- Pasture Weed Management – Walt Fick, K-State range scientist
- Kansas Forage and Grassland Council Update – Mark Jensen, KSFGC board member
- Animal Health Concerns When Grazing Cover Crops – Jaymelynn Farney, K-State animal scientist
- Pasture Risk Insurance – Monte Vandeveer, K-State agricultural economist
- Producer Panel

Registration is requested by Feb. 10. Lunch is included in the registration fee, which is $25 for KSFGC members and $55 for non-members. Online registration and more information are available at www.southwest.ksu.edu. More information is available by contacting Foster at 620-276-8286 or anserdj@ksu.edu.

A.J Foster, Southwest Area Crops and Soils Specialist
anserdj@ksu.edu

6. Preplant Corn School, Feb. 23, Wilson

K-State Research and Extension will hold a Corn Preplant School in Wilson, at the St. Wenceslaus Parish Hall, on Feb. 23, from 9 a.m. to 3 p.m.

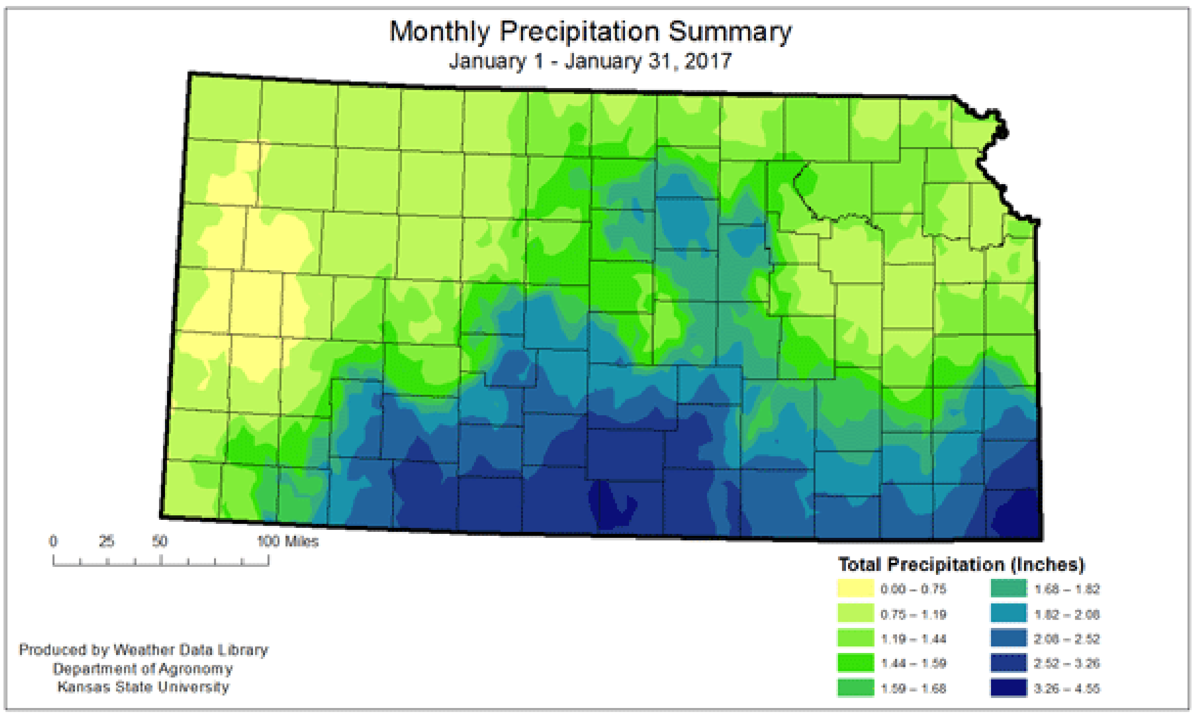
Topics include:

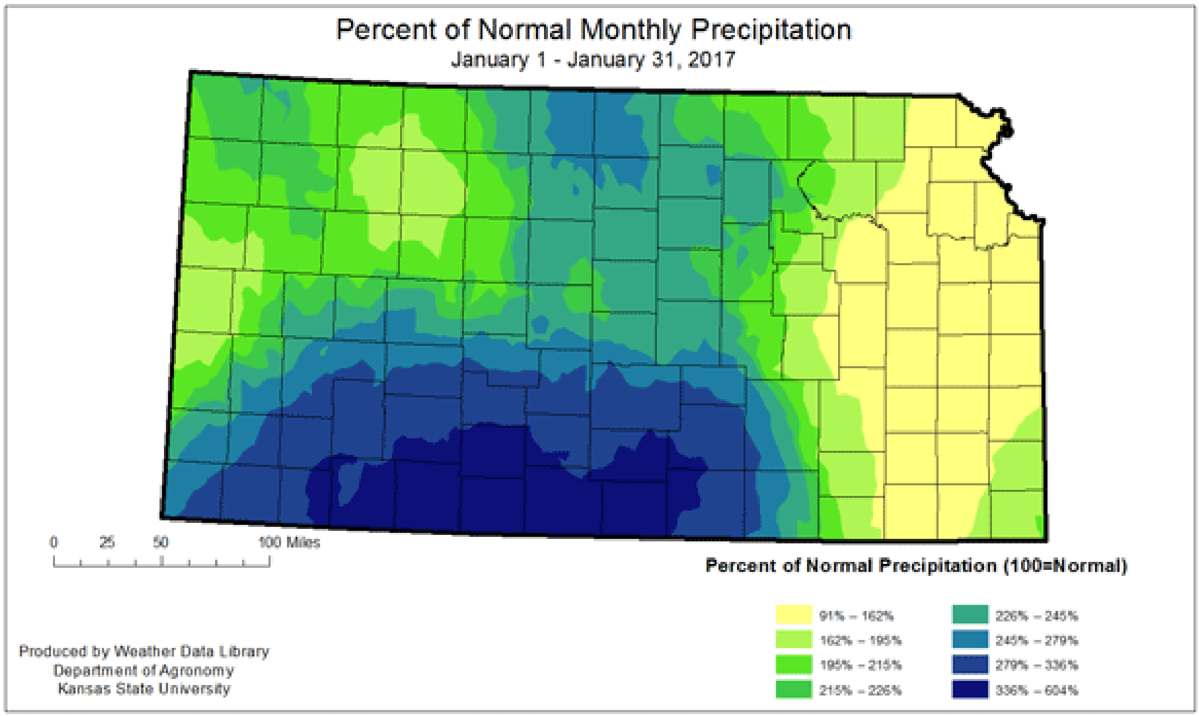
- Insects in Corn
- Corn Production Practices
- Diseases in Corn
- Looking at Planting Practices and Early Season Corn
- Economics
- Weed Control

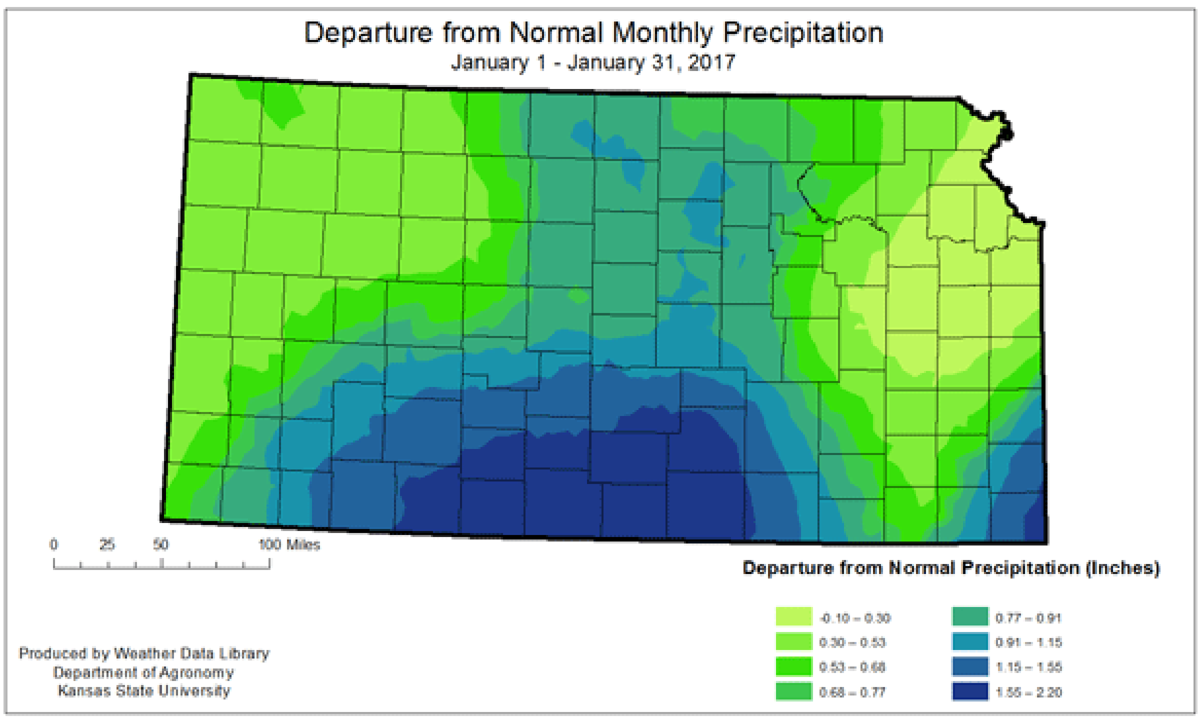
A lunch will be provided at no charge. Please RSVP by Feb. 21 to Michelle Buchanan, Midway Extension District, 785-472-4442 or 785-483-3157, or email mbuchanan@ksu.edu

7. Kansas weather summary January 2017: A big storm on Jan 13-16

The highlight of January weather in Kansas was the storm system that moved through the state from the 13th through the 16th. In advance of the event, ice storm warnings were issued. Eastern Kansas missed most of the ice, while southwest Kansas had significant icing followed by as much as 6 inches of snow. This event pushed the statewide average precipitation to 1.60 inches, or 227 percent of normal. It ranks as the 7th wettest January in 123 years of record. The South Central Division had the highest precipitation both in amount and percent of normal. The divisional average was 3.59 inches, or 361 percent of normal. The West Central Division had the lowest average precipitation at 0.81 inches, or 158 percent of normal. The Northeast Division was closest to normal with an average of 1.06 inches, or 140 percent of normal. The National Weather Service Cooperative station at Sun City, Barber County, reported the greatest monthly precipitation with 5.13 inches. For the Community Collaborative Rain, Hail, and Snow network (CoCoRaHS) the greatest monthly total was 4.16 inches at Deerfield 0.6 NE, Kearny County. The greatest 24-hour totals reported: 2.39 inches at Coldwater, Comanche County, on the 16th (NWS); 3.74 inches at Sharon 0.2 W, Barber County, on the 16th (CoCoRaHS).




Percent of Normal Monthly Precipitation
January 1 - January 31, 2017
0 25 50 100 Miles
Percent of Normal Precipitation (100=Normal)
91% – 162%
162% – 195%
195% – 215%
215% – 226%
226% – 245%
245% – 279%
279% – 336%
336% – 604%
Produced by Weather Data Library
Department of Agronomy
Kansas State University


Departure from Normal Monthly Precipitation
January 1 - January 31, 2017
0 25 50 100 Miles
Departure from Normal Precipitation (Inches)
-0.10 – 0.30
0.30 – 0.53
0.53 – 0.68
0.68 – 0.77
0.77 – 0.91
0.91 – 1.15
1.15 – 1.55
1.55 – 2.20
Produced by Weather Data Library
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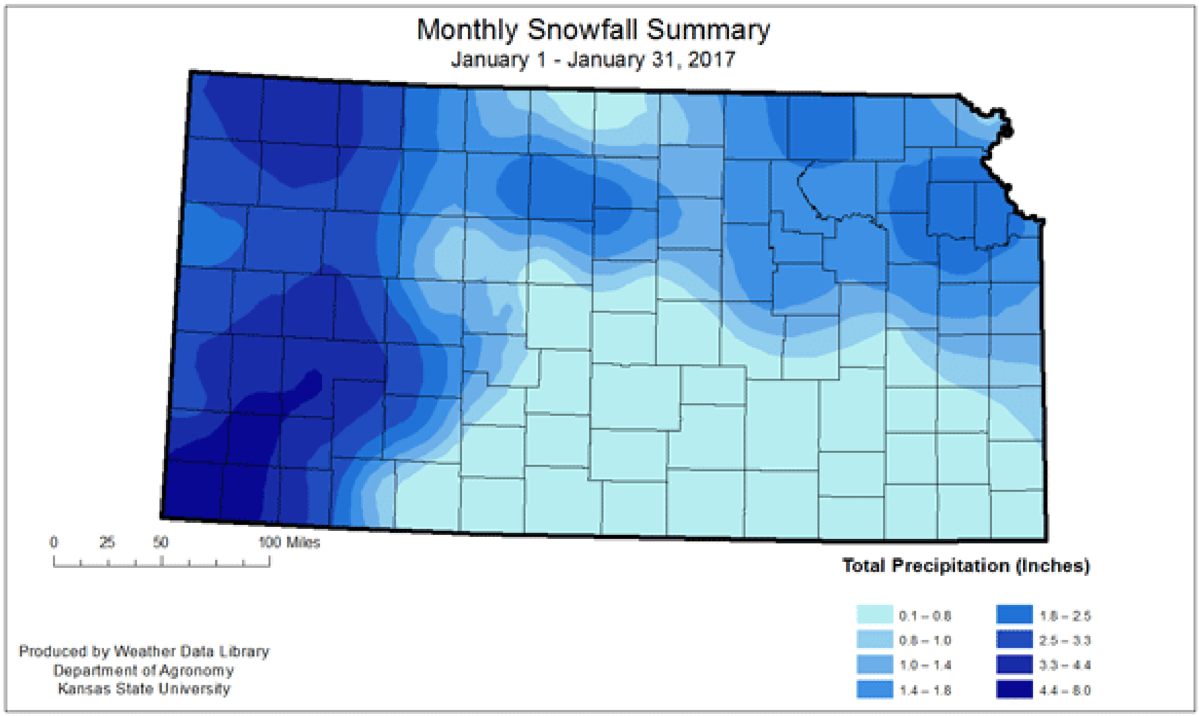
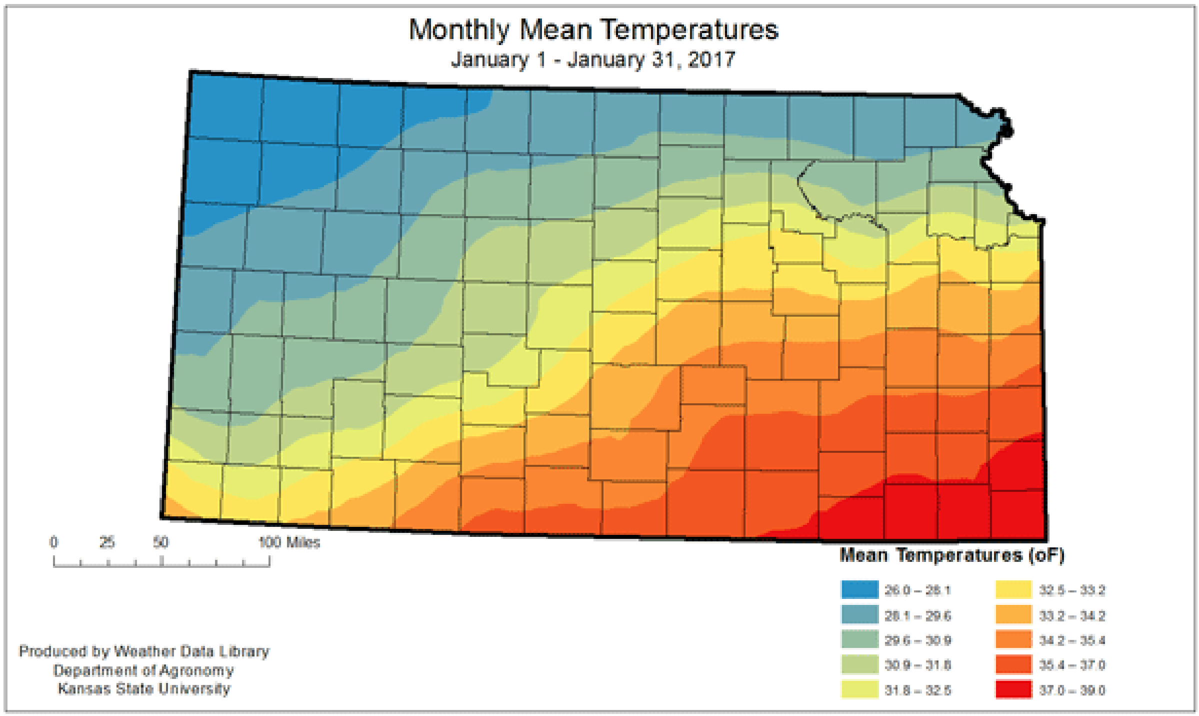


Warmer-than-normal temperatures returned in January. The statewide average temperature was 31.9 degrees F, or 2 degrees warmer than normal. This was the 35th warmest since 1896. The western divisions were the closet to normal for the month. The Northwest Division averaged 27.8 degrees F, or -0.7 degrees cooler than normal, while the Southwest Division averaged 32.7 degrees F, or 0.6 degrees warmer than normal. The West Central Division fell right in between, with an average of 29.8 degrees F, which was exactly normal. The Southeast Division had the greatest departure with an average temperature of 36.7 degrees F, or 4.6 degrees warmer than normal. Even with the warmth, three record low maximum temperatures were tied, while one record low minimum temperature was tied. On the warm side, there were 23 new record high maximum temperatures set and 68 new record high minimum temperatures set. The coldest minimum temperature reported was 15 degrees F at Colby 1SW, Thomas County, on the 6th. The highest temperature reported was 78 degrees F at Pratt, Pratt County, on the 31st.


Monthly Mean Temperatures
January 1 - January 31, 2017
0
25
50
100 Miles
Mean Temperatures (oF)
26.0 – 28.1
28.1 – 29.6
29.6 – 30.9
30.9 – 31.8
31.8 – 32.5
32.5 – 33.2
33.2 – 34.2
34.2 – 35.4
35.4 – 37.0
37.0 – 39.0
Produced by Weather Data Library
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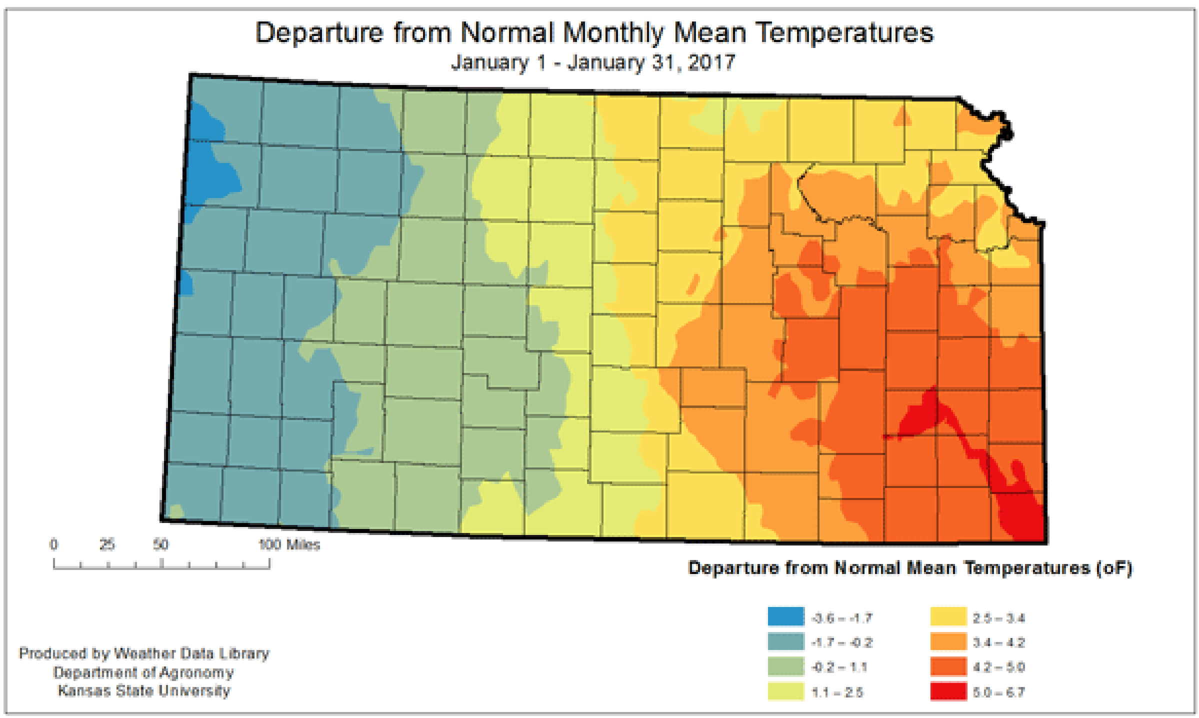
Departure from Normal Monthly Mean Temperatures
January 1 - January 31, 2017
0
25
50
100 Miles
Departure from Normal Mean Temperatures (oF)
-3.6 – -1.7
-1.7 – -0.2
-0.2 – 1.1
1.1 – 2.5
2.5 – 3.4
3.4 – 4.2
4.2 – 5.0
5.0 – 6.7
Produced by Weather Data Library
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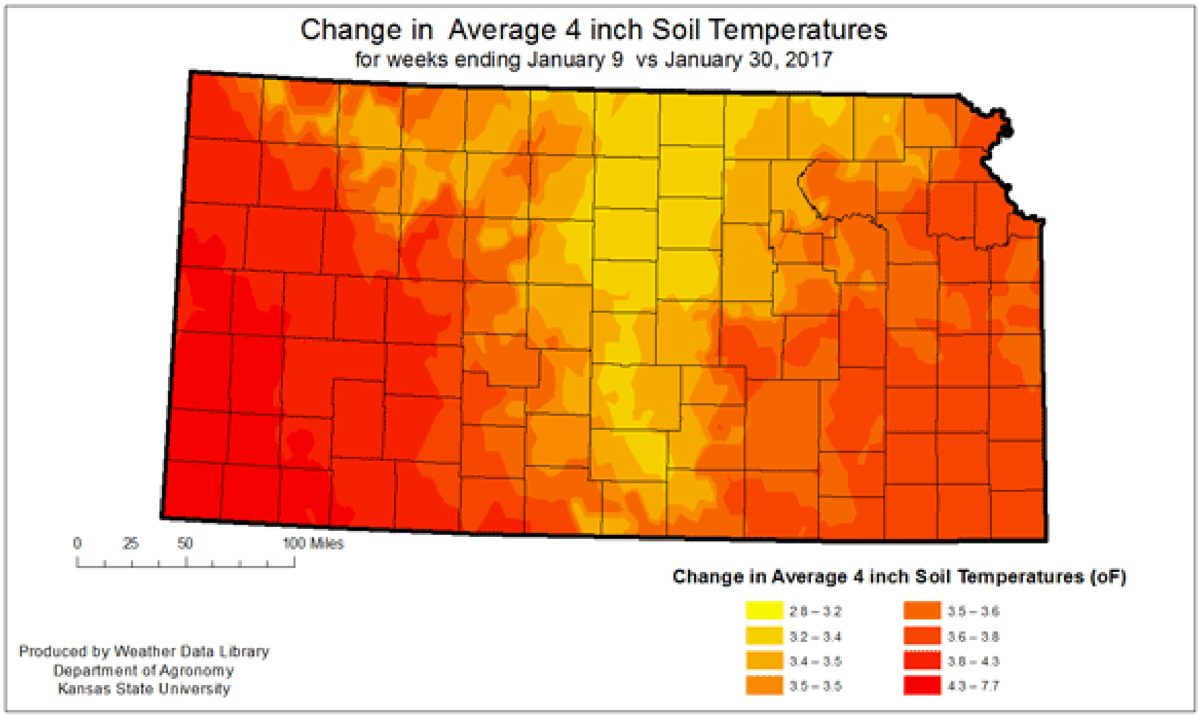


The month was rather calm as far as severe weather events. There were no reports of tornadoes, hail or high winds. As mentioned earlier, the major severe weather event was the ice storm that went from January 13th through the 16th.

The higher-than-normal precipitation resulted in improved conditions in the U.S. Drought Monitor. However, since this is the driest part of the year, improvements were limited. Until we move into the wetter season, the rate of change is likely to slow, especially in the western half of the state.

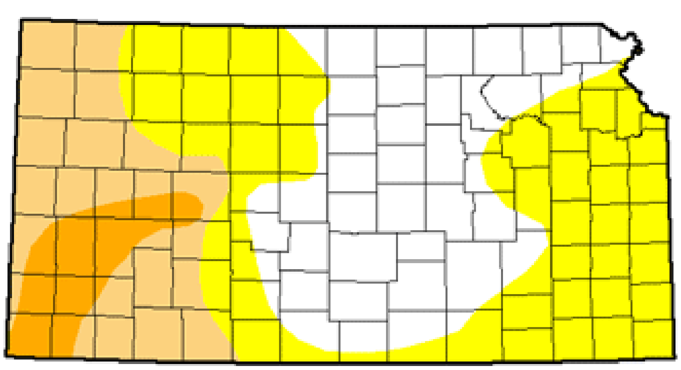
U.S. Drought Monitor

Kansas

January 31, 2017

(Released Thursday, Feb. 2, 2017)

Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	35.09	38.89	19.34	6.68	0.00	0.00
Last Week 1/24/2017	35.09	38.88	19.36	6.68	0.00	0.00
3 Months Ago 11/1/2016	66.04	29.77	4.19	0.00	0.00	0.00
Start of Calendar Year 1/3/2017	17.31	51.98	17.13	13.58	0.00	0.00
Start of Water Year 9/27/2016	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago 2/2/2016	97.84	2.16	0.00	0.00	0.00	0.00

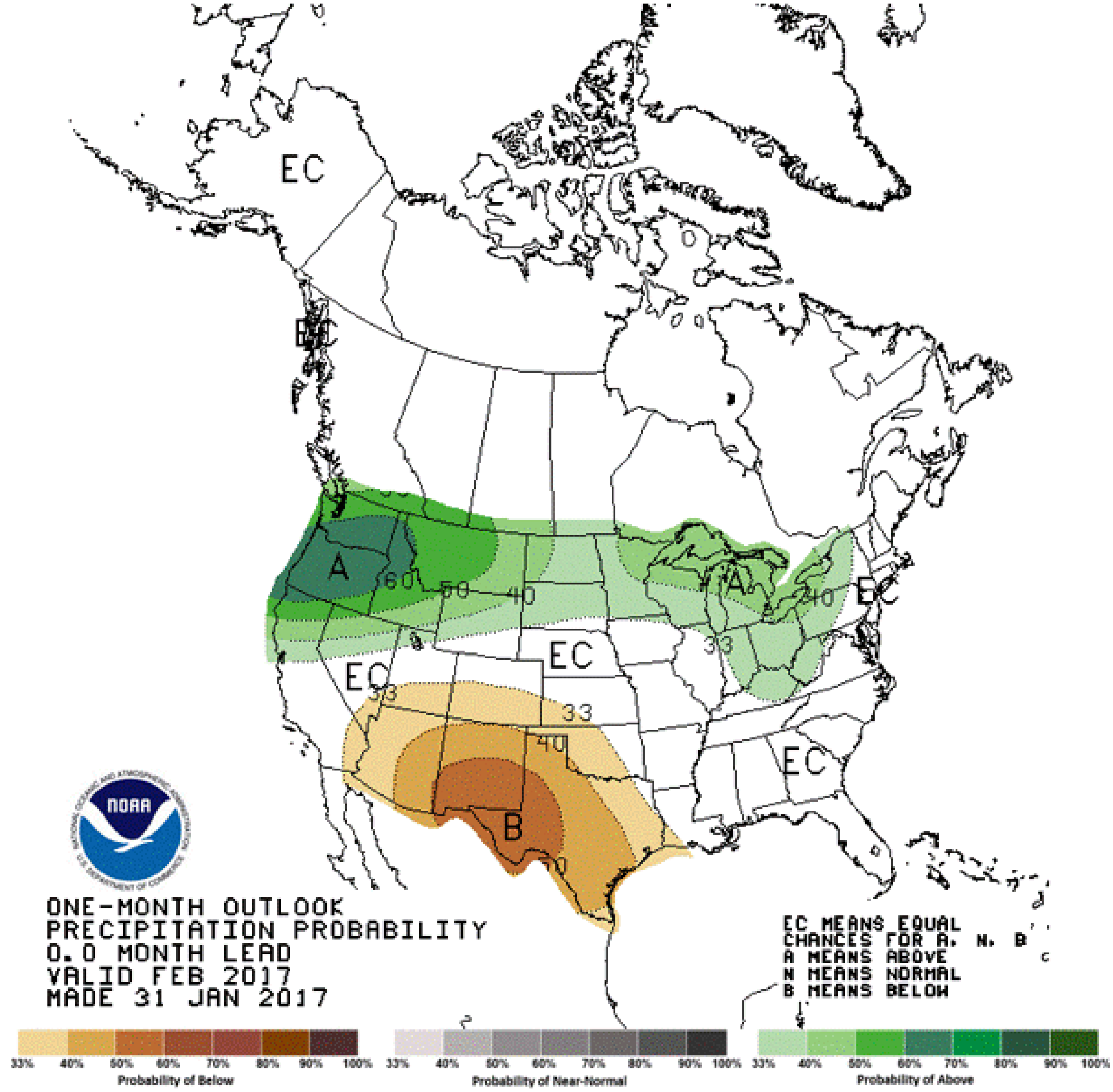
Intensity:

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.

Author:
David Simeral
Western Regional Climate Center

http://droughtmonitor.unl.edu/



Jan 2017

Kansas Climate Division Summary

	Precipitation (inches)						Temperature (°F)			
	Jan 2017			2017 through Jan					Monthly Extremes	
Division	**Total**	**Dep.[1]**	**% Normal**	**Total**	**Dep.[1]**	**% Normal**	**Ave**	**Dep.[1]**	**Max**	**Min**
Northwest	0.87	0.42	195	0.87	0.42	195	27.8	-0.7	65	-15
West Central	0.81	0.31	158	0.81	0.31	158	29.8	0.0	71	-8
Southw	1.73	1.26	359	1.73	1.26	359	32.7	0.6	75	-10

est										
North Central	1.31	0.68	207	1.31	0.68	207	30.3	2.4	69	-10
Central	1.56	0.87	223	1.56	0.87	223	32.5	2.6	70	-4
South Central	2.89	2.06	361	2.89	2.06	361	34.6	2.5	74	-2
Northeast	1.06	0.25	140	1.06	0.25	140	30.1	2.8	64	-6
East Central	1.20	0.26	126	1.20	0.26	126	33.2	4.1	69	-4
Southeast	2.14	0.89	175	2.14	0.89	175	36.2	4.5	74	2
STATE	1.60	0.86	227	1.60	0.86	227	31.9	2.1	75	-15

1. Departure from 1981-2010 normal value

2. State Highest temperature: 78 oF at Pratt, Pratt County, on the 31st.

3. State Lowest temperature: -15 oF at Colby 1SW, Thomas County, on the 6th.

4. Greatest 24hr: 2.39 inches at Coldwater, Comanche County, on the 16th (NWS); 3.74 inches at Sharon 0.2 W, Barber County, on the 16th (CoCoRaHS).

Source: KSU Weather Data Library

Mary Knapp, Weather Data Library
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8. Comparative Vegetation Condition Report: January 24 - 30

The weekly Vegetation Condition Report maps below can be a valuable tool for making crop selection and marketing decisions.

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 27-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.

The Vegetation Condition Report (VCR) maps were originally developed by Dr. Kevin Price, K-State professor emeritus of agronomy and geography, and his pioneering work in this area is gratefully acknowledged.

The maps have recently been revised, using newer technology and enhanced sources of data. Dr. Nan An, Imaging Scientist, collaborated with Dr. Antonio Ray Asebedo, assistant professor and lab director of the Precision Agriculture Lab in the Department of Agronomy at Kansas State University, on the new VCR development. Multiple improvements have been made, such as new image processing algorithms with new remotely sensed data from EROS Data Center.

These improvements increase sensitivity for capturing more variability in plant biomass and photosynthetic capacity. However, the same format as the previous versions of the VCR maps was retained, thus allowing the transition to be as seamless as possible for the end user. For this spring, it was decided not to incorporate the snow cover data, which had been used in past years. However, this feature will be added back at a later date. In addition, production of the Corn Belt maps has been stopped, as the continental U.S. maps will provide the same data for these areas. Dr. Asebedo and Dr. An will continue development and improvement of the VCRs and other advanced maps.

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

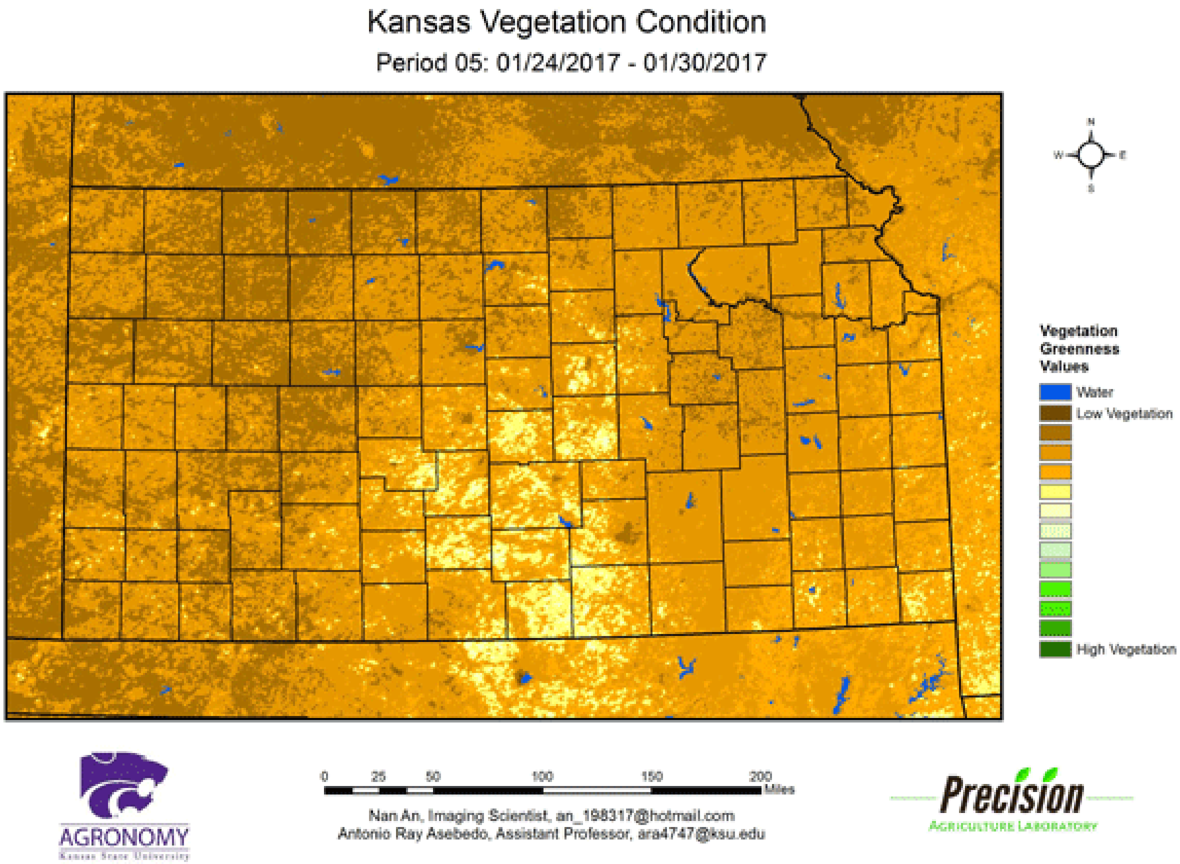

Figure 1. The Vegetation Condition Report for Kansas for January 24 – January 30, 2017 from K-State's Precision Agriculture Laboratory shows almost no photosynthetic activity. The little production is mainly in central Kansas. This is not unexpected given the season, lack of snow cover, and slightly warmer-than-normal temperatures.

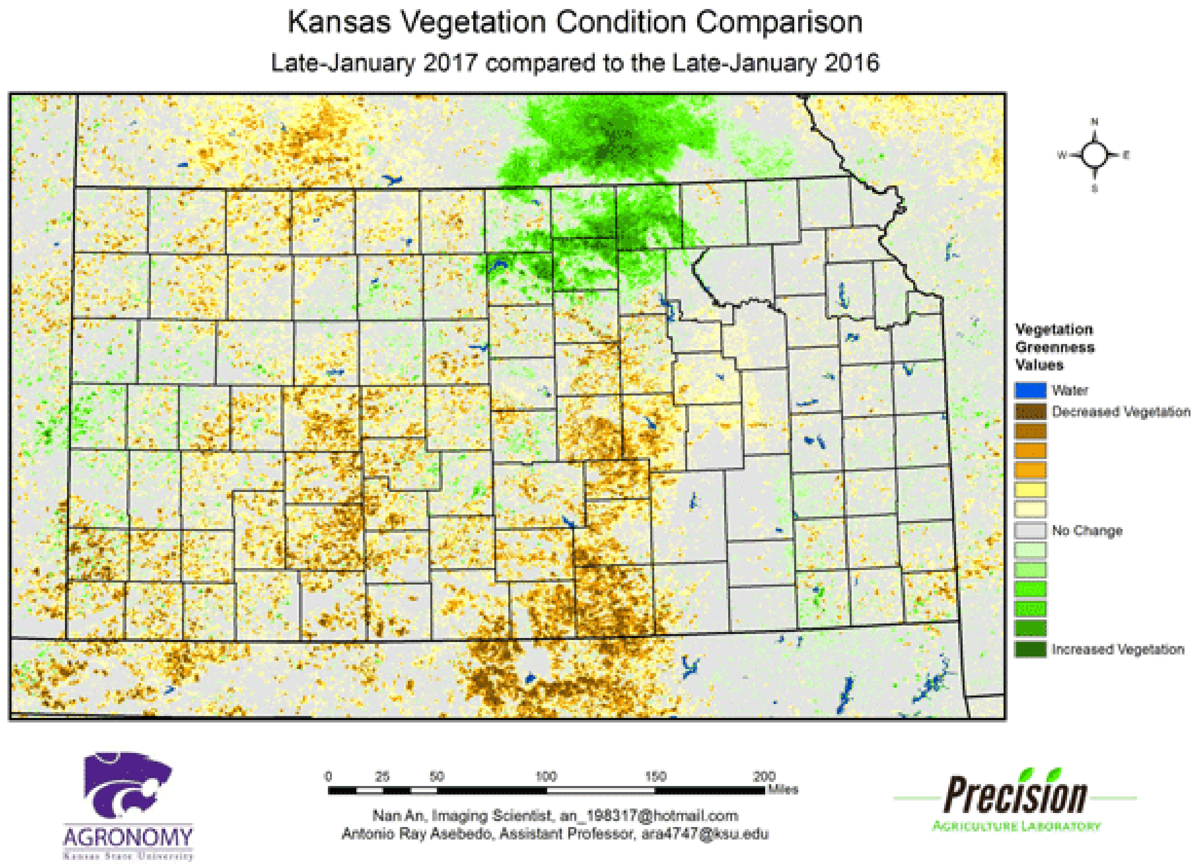

Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for January 24 – January 30, 2017 from K-State's Precision Agriculture Laboratory shows a small area of much higher NDVI values in north central Kansas. Last year at this time, much of that area was snow covered. Lower NDVI values are most prominent in south central Kansas. The winter wheat is less advanced this year than last.

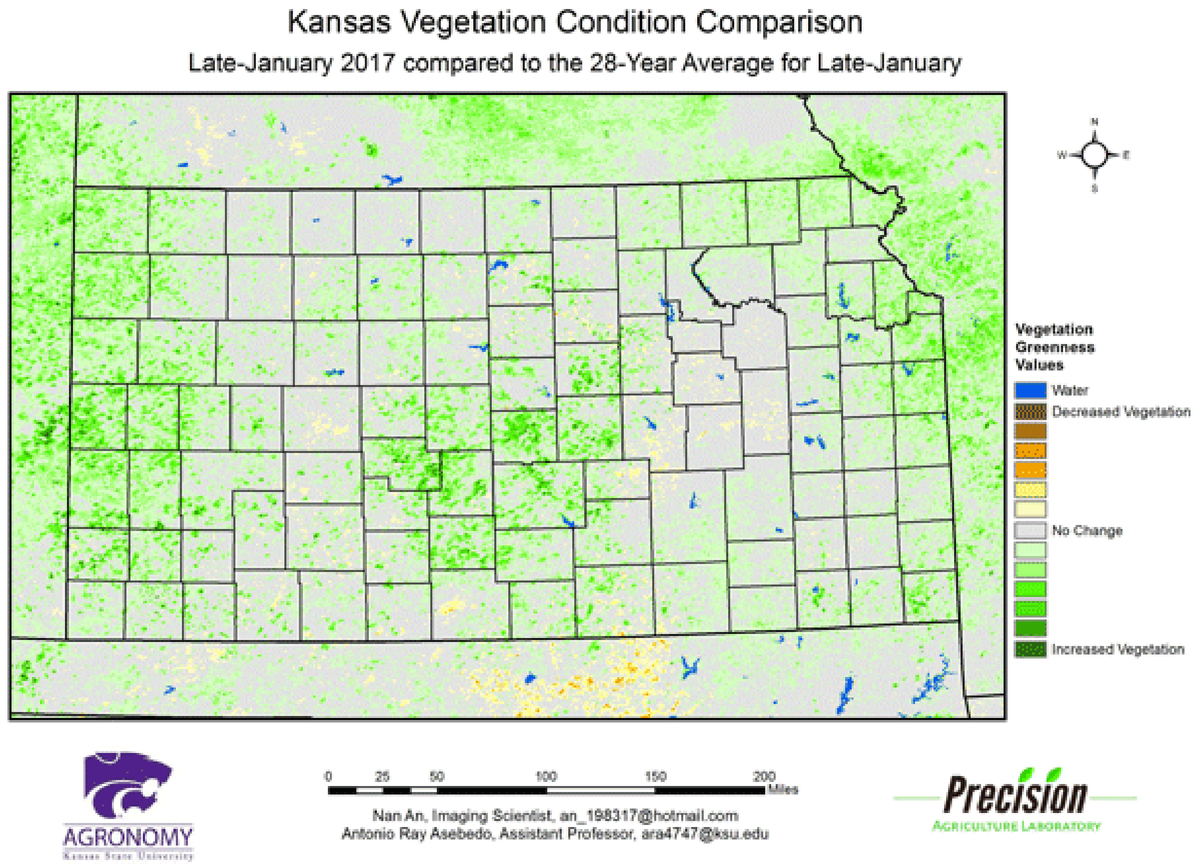

Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for January 24 – January 30, 2017 from K-State's Precision Agriculture Laboratory much of the state has near-normal vegetative activity. The highest NDVI values are in the central part of the state.

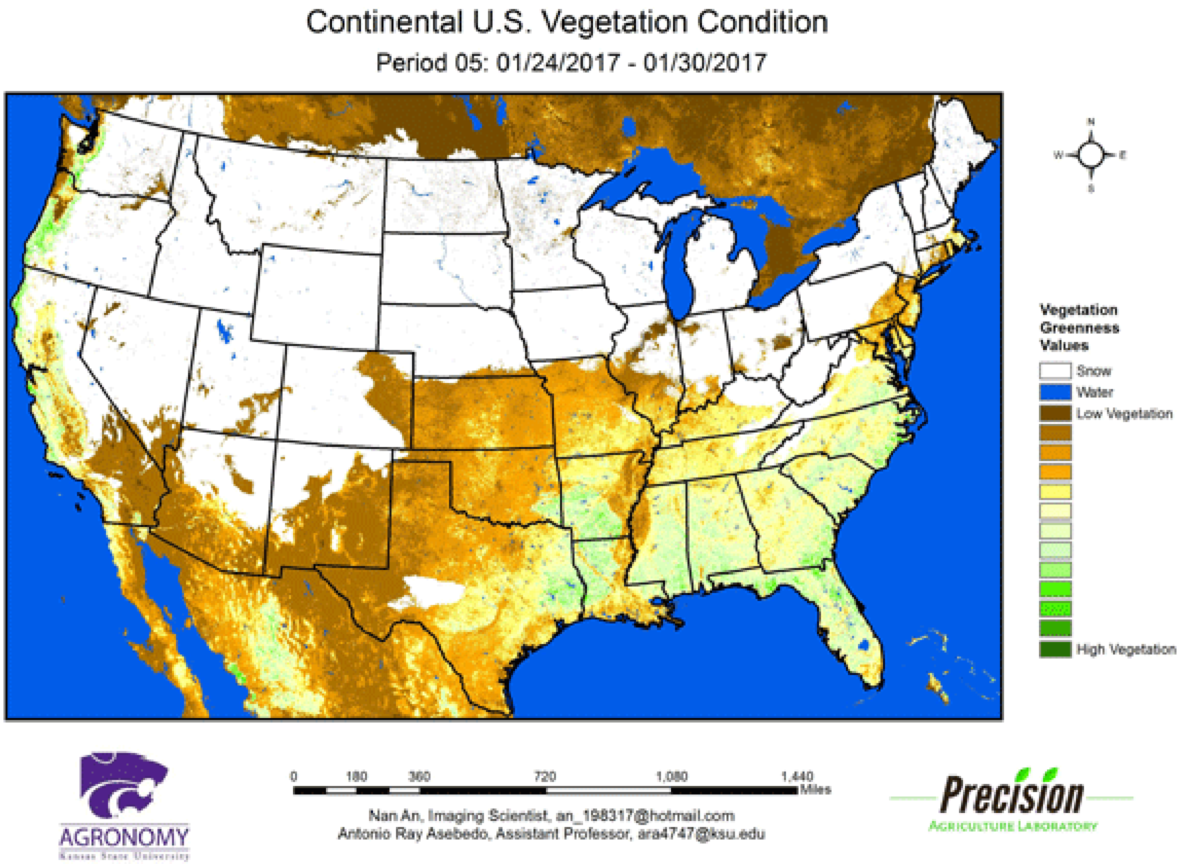

Figure 4. The Vegetation Condition Report for the U.S for January 24 – January 30, 2017 from K-State's Precision Agriculture Laboratory shows the region of highest NDVI values is confined to the South, particularly in east Texas and Louisiana. Snow coverage has retreated to the Northern Plains, although there was a small pocket in western Texas. The Sierra Nevada of California ended January with some of the highest snowfall totals on record for the month.

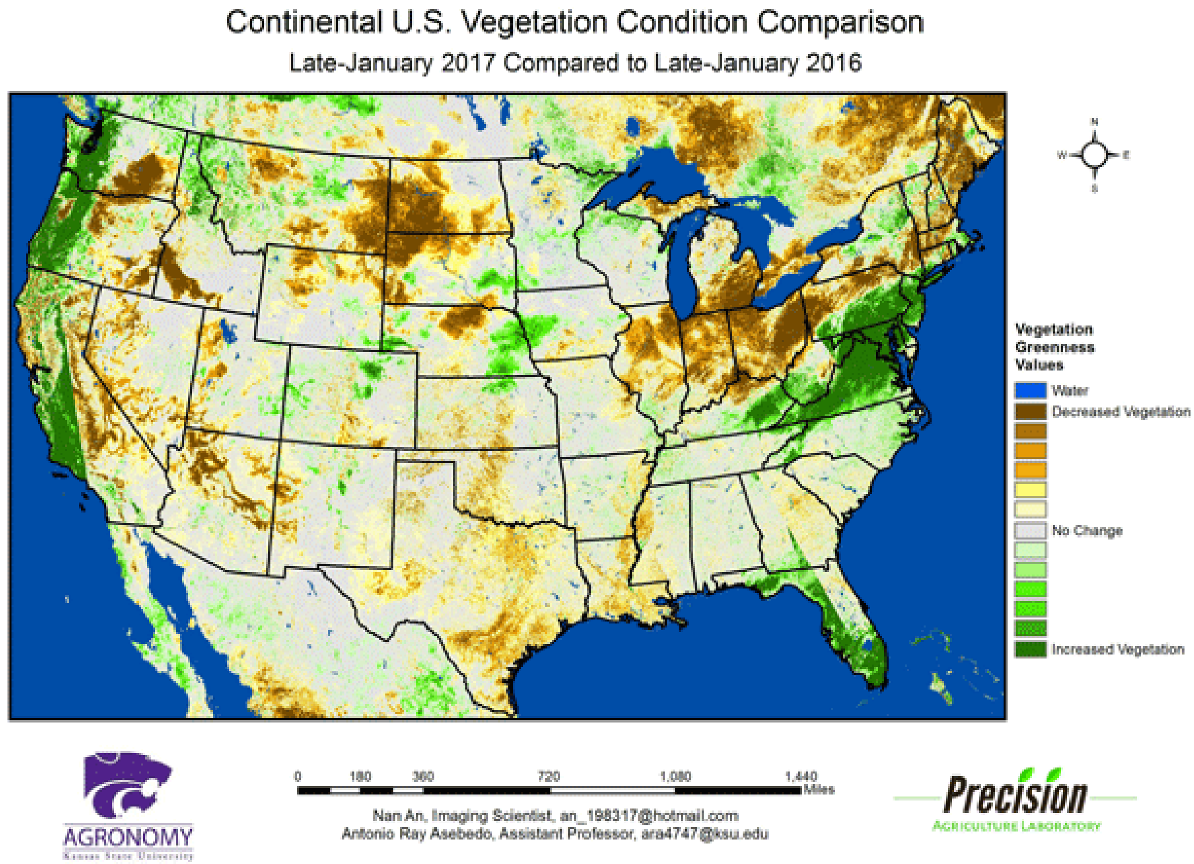

Figure 5. The U.S. comparison to last year at this time for January 24 – January 30, 2017 from K-State's Precision Agriculture Laboratory shows higher NDVI values present in the mid-Atlantic states, and along the Pacific Northwest. Some splice lines due to persistent cloud cover contamination are visible in California and Florida.

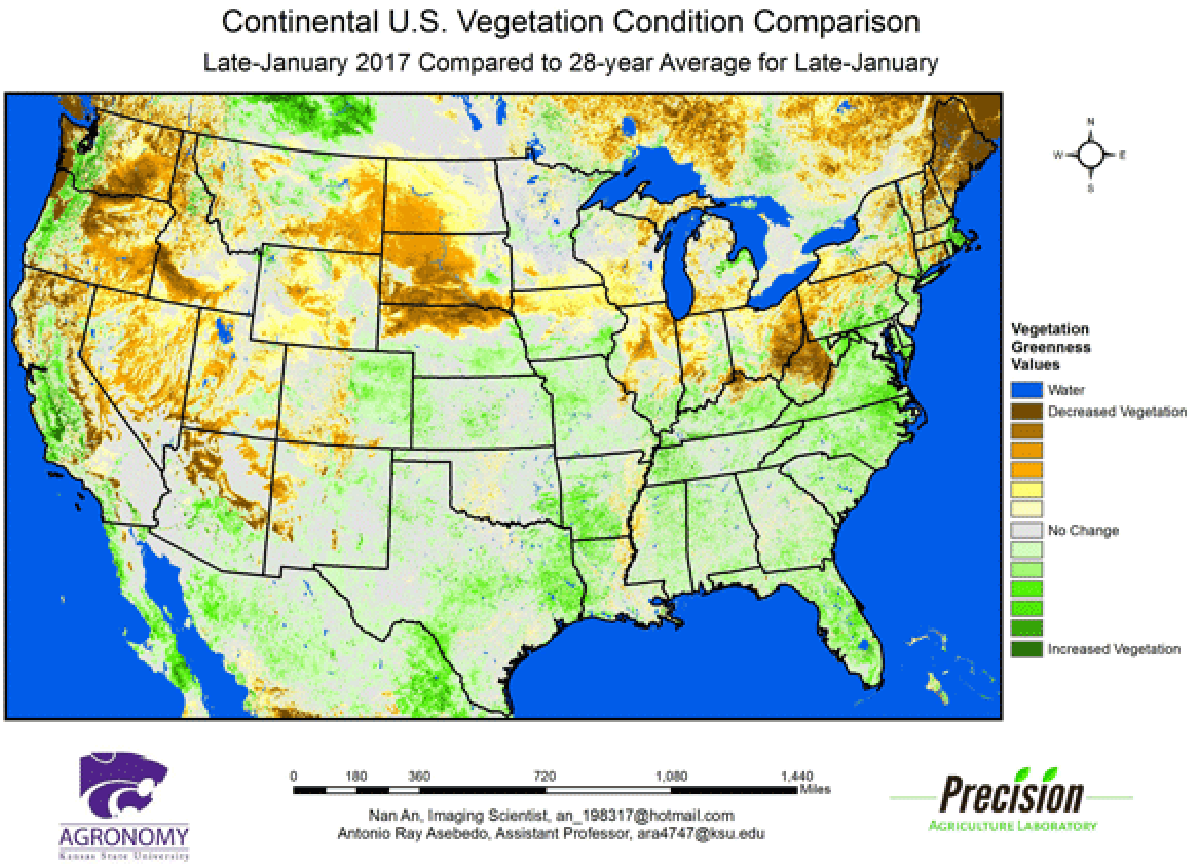

Figure 6. The U.S. comparison to the 27-year average for the period of January 24 – January 30, 2017 from K-State's Precision Agriculture Laboratory shows below-average photosynthetic activity in the Intermountain West and the Northern Plains, where snow cover is greatest. Above-average NDVI values are visible in the central valleys of California, where recent rainfall has encouraged plant growth.

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