

Extension Agronomy

eUpdate

01/09/2015

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.

eUpdate Table of Contents | 01/09/2015 | Issue 488

1. Soil temperatures and wheat condition	3
2. New K-State Chemical Weed Control guide now available	5
3. Cover Your Acres Conference in Oberlin, January 20-21	6
4. Kansas Ag Technologies Conference Set for Jan. 22-23 in Salina	8
5. North Central Kansas Field Day in Courtland, January 30	10
6. K-State Sorghum Production Schools scheduled for February	11
7. Canola College 2015 in Enid, February 19	13
8. Kansas weather summary for December 2014: Milder trend	14
9. Year-end summary of Kansas weather in 2014: From windy to wet	19
10. Comparative Vegetation Condition Report: December 23 - January 5	26
11. December cloud cover in Kansas	36

1. Soil temperatures and wheat condition

Winter wheat can normally withstand cold temperatures well as long as soil temperatures at the depth of the crown are not in the single digits for a prolonged period of time. Soil temperature is a more important consideration than air temperature alone during the winter.

In most cases so far, soil temperatures have not been cold enough to create concern for the wheat. Where you might get some damage would be if plants were weakened by other factors, such as greenbug or aphid feeding, Hessian fly infestation, wheat streak mosaic, or drought stress. In those situations, soil temperatures at the crown depth wouldn't have to get so cold to cause additional injury to the wheat.

					Sc	il Ten	perat	ures a	t theE	nd of	the Re	ecent (Cold W	/eathe	er						
		Colby			Tribune		G	arden Ci	ity		Hays			St. John			Scandia		N	lanhatta	m
	Air	2" Soil	4" Soil	Air	2" Soil	4" Soil	Air	2" Soil	4" Soil	Air	2" Soil	4" Soil	Air	2" Soil	4" Soil	Air	2" Soil	4" Soil	Air	2" Soil	4" Soil
	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
Date	oF	oF	oF	OF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF	oF
01-07-15 07:00	11.3	30.6	31.5	12.3	24.2	26.7	13.6	28.7	30.6	13.5	29.8	29.6	13.1	33.7	35.3	8.8	19.1	23.7	10.3	29.2	31.7
01-07-15 08:00	10.4	30.6	31.5	12.1	23.6	26.2	13.2	28.3	30.4	12.8	29.5	29.5	12.3	33.6	35.3	7.8	18.5	23.2	9.7	28.9	31.6
01-07-15 09:00	9.7	30.5	31.5	11.8	23.1	25.8	13.5	27.9	30.1	12.5	29.2	29.3	12.0	33.6	35.2	7.4	18.1	22.8	9.5	28.8	31.6
01-07-15 10:00	10.2	30.5	31.5	12.4	22.7	25.4	14.1	27.6	29.9	12.6	29.0	29.1	12.4	33.5	35.2	7.6	18.1	22.5	8.4	28.6	31.6
01-07-15 11:00	11.1	30.4	31.4	13.4	22.8	25.1	14.6	27.5	29.6	13.0	28.8	28.9	12.8	33.4	35.1	8.8	18.8	22.7	8.5	28.6	31.5
01-07-15 12:00	11.8	30.4	31.4	13.6	23.1	24.9	14.2	27.5	29.5	13.7	28.9	28.8	14.1	33.4	35.1	9.3	19.0	23.1	9.8	28.9	31.5
01-07-15 13:00	12.9	30.4	31.4	15.0	23.6	24.9	15.1	27.6	29.5	14.7	29.3	28.9	14.9	33.3	35.0	9.9	20.4	23.6	11.0	29.3	31.5
01-07-15 14:00	14.2	30.4	31.4	16.4	24.4	25.1	17.6	28.1	29.5	14.7	29.7	29.0	15.1	33.3	35.0	10.8	22.1	24.7	11.6	29.6	31.5
01-07-15 15:00	14.8	30.4	31.4	17.2	25.3	25.4	18.3	28.5	29.7	14.5	30.2	29.2	15.6	33.3	35.0	11.5	23.3	25.6	12.0	29.8	31.5
01-07-15 16:00	14.9	30.4	31.4	17.7	26.0	25.8	18.1	28.5	29.8	15.0	30.5	29.4	16.1	33.3	35.0	11.8	23.8	26.3	11.9	29.8	31.5
01-07-15 17:00	15.3	30.3	31.4	17.4	26.5	26.2	18.5	28.5	29.8	14.9	30.7	29.5	15.2	33.2	34.9	10.8	23.2	26.4	11.2	29.5	31.4
01-07-15 18:00	11.8	30.3	31.4	16.6	26.4	26.5	16.2	28.3	29.8	12.2	30.6	29.6	12.7	33.2	34.9	7.1	21.4	25.6	7.7	29.1	31.4
01-07-15 19:00	8.3	30.3	31.3	16.2	25.7	26.5	13.0	27.8	29.7	8.6	30.1	29.5	9.8	33.2	34.9	3.5	19.5	24.3	4.4	28.5	31.4
01-07-15 20:00	7.4	30.3	31.3	16.7	24.9	26.3	11.4	27.3	29.4	6.0	29.3	29.3	6.8	33.1	34.8	0.6	18.0	23.1	4.4	28.0	31.3
01-07-15 21:00	7.2	30.2	31.3	16.1	24.2	26.0	11.1	26.9	29.2	4.8	28.6	29.0	4.7	33.1	34.8	0.2	16.8	22.1	3.9	27.5	31.3
01-07-15 22:00	8.3	30.2	31.3	16.3	23.5	25.6	11.0	26.5	28.9	4.8	27.9	28.6	3.6	33.0	34.7	1.4	16.0	21.2	2.1	27.2	31.2
01-07-15 23:00	9.7	30.2	31.3	15.8	23.1	25.3	11.0	26.1	28.6	6.3	27.4	28.3	4.6	32.9	34.7	1.9	15.5	20.6	1.3	26.9	31.1
01-08-15 00:00	10.9	30.2	31.3	15.0	22.6	24.9	11.8	25.8	28.4	7.1	26.9	27.9	5.9	32.8	34.6	2.9	14.9	20.1	2.3	26.6	31.0
01-08-15 01:00	12.5	30.1	31.3	15.8	22.0	24.6	12.8	25.6	28.2	8.6	26.5	27.6	6.5	32.8	34.6	3.9	14.4	19.6	1.9	26.5	30.9
01-08-15 02:00	13.5	30.1	31.3	15.6	21.6	24.2	13.4	25.4	27.9	10.6	26.2	27.4	8.1	32.7	34.5	5.3	14.1	19.2	2.8	26.3	30.8
01-08-15 03:00	15.3	30.1	31.3	16.1	21.3	23.9	15.2	25.2	27.8	12.2	26.1	27.2	8.5	32.6	34.5	5.8	14.0	19.0	3.8	26.2	30.6
01-08-15 04:00	17.6	30.0	31.2	16.5	21.0	23.6	16.0	25.1	27.6	12.9	26.0	27.0	8.5	32.6	34.4	6.1	13.9	18.9	6.0	26.1	30.5
01-08-15 05:00	18.5	30.0	31.2	17.6	20.9	23.4	18.1	25.1	27.5	13.8	26.0	26.9	9.1	32.5	34.4	8.1	14.1	18.8	7.0	26.1	30.4
01-08-15 06:00	19.7	30.0	31.2	18.2	20.8	23.2	19.7	25.1	27.5	14.7	26.0	26.9	10.2	32.4	34.3	9.2	14.3	18.9	8.1	26.1	30.3
01-08-15 07:00	19.3	30.0	31.2	19.1	20.8	23.0	21.0	25.2	27.4	17.5	26.0	26.8	10.6	32.4	34.3	9.1	14.7	19.1	9.2	26.2	30.3
01-08-15 08:00	19.2	30.0	31.2	19.8	20.7	22.9	22.7	25.3	27.4	19.1	26.2	26.8	11.5	32.3	34.2	10.3	14.8	19.2	10.4	26.3	30.2
01-08-15 09:00	24.8	30.0	31.2	24.2	20.8	22.8	23.9	25.5	27.5	20.1	26.4	26.9	12.8	32.2	34.1	12.9	15.3	19.4	13.1	26.4	30.1
01-08-15 10:00	34.8	30.0	31.2	40.5	21.5	22.8	27.8	25.9	27.6	23.7	26.8	27.0	17.8	32.2	34.1	16.2	16.5	20.1	15.8	26.8	30.1

Areas with cover, whether snow or sod saw less impact from the cold.

Kansas State University Department of Agronomy

2004 Throckmorton Plant Sciences Center | Manhattan, KS 66506

www.agronomy.ksu.edu | www.facebook.com/KState.Agron | www.twitter.com/KStateAgron



Last year at about this same time, soil temperatures at the 2-inch depth at Scandia dipped into the single digits. And there was some winterkill on certain varieties last year, especially where wheat was planted into dry fluffy soils with poor seed-soil contact and on exposed slopes.

Producers can check their fields for winterkill injury by digging up some plants and bringing them inside. After a week or so of warm conditions and water, wheat should begin greening up if it is alive. Otherwise, producers can wait until spring green up begins in the field. Areas of dead or dying wheat should be noticeable at that time. Be aware, however, that damaged wheat may begin to green up then die back later.

Jim Shroyer, Crop Production Specialist Emeritus jshroyer@ksu.edu

Mary Knapp, Weather Data Library mknapp@ksu.edu

2. New K-State Chemical Weed Control guide now available

The new K-State 2015 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland guide, SRP 1117, is now available. Hard copies will be available in County/District Extension offices. A PDF version can be found online at: http://www.ksre.ksu.edu/bookstore/pubs/SRP1117.pdf



Dallas Peterson, Weed Management Specialist dpeterso@ksu.edu

Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist <u>cthompso@ksu.edu</u>

3. Cover Your Acres Conference in Oberlin, January 20-21

K-State Research and Extension is teaming up with the Northwest Kansas Crop Residue Alliance to host the 12th annual Cover Your Acres Winter Conference for crop producers and consultants Jan. 20-21 at the Gateway Center in Oberlin, Kansas. The same program will be offered both days of the conference.

Cover Your Acres is a producer-driven meeting focused on new ideas and research-based updates in crop production in northwest Kansas and the central High Plains.

The conference, which typically draws more than 600 attendees from Kansas and other states, highlights the latest technology, methods and conservation practices to improve crop production in the region. This year it will feature university specialists and industry representatives discussing issues such as kochia control, cover crops and soil microbiology, drought-tolerant corn, wheat growth and development effects on yield, the Ogallala Aquifer, implications of the new farm bill and crop insurance. Registration will begin at 7:45 a.m., with educational sessions ending at 5:00 p.m. followed by a "bull session" on Tuesday evening, where attendees can visit with industry and university specialists.

Early registration is due by Jan. 14. The fee is \$40 for Jan. 20, \$35 for Jan. 21 or both days for \$50. After Jan. 14, the cost is \$50 per day. The conference fee includes lunch and educational materials. Continuing education unit credits are available for commercial applicators and certified crop advisors.

Mail your registration, with a check payable to KSU, to the Northwest Area Office, ATTN: Cover Your Acres, P.O. Box 786, Colby, KS 67701. To view the conference details and for online registration, visit <u>www.northwest.ksu.edu/coveryouracres</u>. For questions, call 785-462-6281.

Major sponsors of the conference include Bayer CropScience, Frontier Ag, Hoxie Implement, Lang Diesel, Monsanto, National Sunflower Association, Pacleader Technology, Plains Equipment Group, Simplot Grower Solutions, Sims Fertilizer, Simpson Farm Enterprises and Surefire Ag Systems.



Figure 1. Location of Gateway Center in Oberlin.

4. Kansas Ag Technologies Conference Set for Jan. 22-23 in Salina

The Kansas Ag Research and Technology Association (KARTA) and K-State Research and Extension would like to announce that the 18th Annual Kansas Agricultural Technologies Conference will be held January 22-23, 2015 in Salina at the Ambassador Hotel and Conference Center, 1616 W. Crawford St.

This annual event brings hundreds of agricultural producers and industry leaders for a two-day interactive workshop on the ever-changing precision agriculture industry. Those in attendance at the conference will hear presentations from dynamic speakers on a wide variety of topics dealing with precision agriculture. The two-day event also includes vendor displays, the KARTA Annual Meeting, research presentations from grant recipients, and an interactive evening discussion that is always an attendee favorite.

The conference is co-sponsored by K-State Research and Extension and the Kansas Agricultural Research and Technology Association, whose members are producers, university researchers and industry professionals focused on learning about agricultural production and technological and informational changes on today's farms.

There is a fee for this conference, and you must register. More information, including online registration is available at <u>www.KARTAonline.org</u>. Information is also available by contacting Lucas Haag, K-State Research and Extension Northwest Area Crops and Soil Specialist, at 785-462-6281 or <u>lhaag@ksu.edu</u>



Figure 1. Location of Ambassador Hotel and Conference Center in Salina.

5. North Central Kansas Field Day in Courtland, January 30

K-State Research and Extension will host the North Central Kansas Experiment Field Winter Update

Jan. 30 from 9:30 until noon.

The update, to be held at the Courtland Arts Center, 421 Main St. in Courtland, will be followed by a complimentary lunch.

The program includes:

- Introduction of New Agronomist and Research Plans
- Targeting High Soybean Yields
- What Have We Learned About Cover Crops
- Herbicide-resistant Weed Update

RSPV by Tuesday, Jan. 27 by calling 785-335-2836 or emailing Andrew Esser at aresser@ksu.edu



Figure 1. Location of in Courtland Arts Center in Courtland.



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.

The one-day schools will cover issues facing sorghum producers: weed control strategies, crop production 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

Local Research and Extension office contacts: Andrea Burns, Ford County, aburns@ksu.edu 620-227-4542 Barbara Addison, Finney County, <u>baddison@ksu.edu</u> 620-272-3670

• Feb. 11: Oakley, Buffalo Bill Center, 3083 U.S. 83

Local Research and Extension office contact: Julie Niehage, Golden Prairie District, Oakley, julienie@ksu.edu 785-671-3245

• Feb. 12: Hutchinson, Hutchinson Community College, 1300 N Plum St

Local Research and Extension office contact: Darren Busick, Reno County,<u>darrenbusick@ksu.edu</u> 620-662-2371

• Feb. 13: Ottawa, Neosho County Community College, 900 E Logan St

Local Research and Extension office contact: Darren Hibdon, Frontier District, <u>dhibdon@ksu.edu</u> 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 <u>K-State</u> <u>Sorghum Schools</u> (<u>http://bit.ly/KSUSorghum</u>) 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: <u>http://bit.ly/KSUSorghumSchool</u>

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

7. Canola College 2015 in Enid, February 19

Canola College 2015, "Taking Canola Production to the Next Level," will be held February 19, 2015 at the Chisholm Trail EXPO Center, 111 W. Purdue, in Enid, Oklahoma. This conference is sponsored by K-State, Oklahoma State University, Great Plains Canola Association, and partners from the canola industry.

There was excellent participation at the Canola College in 2014 and with the growing interest in and success with the crop, we have every reason to believe that the crowd will be even larger in 2015.

This will be the premier canola education/training event in the region in 2015. Anyone with an interest in canola will want to be part of this event where they will be able to share ideas and experiences with canola experts and more than 300 new and veteran canola producers and industry members.

There will be four concurrent breakout sessions with the following topics covered by experts in their areas:

- Basic Production Practices Mike Stamm, K-State, and Heath Sanders, Great Plains Canola Association
- Advanced Production Practices Bob Schrock, Grower, Kiowa, Kan., and Jay Bjerke, Agronomic Services Manager, Northstar Agri Industries
- Canola Economics Eric DeVuyst, OSU Extension Agricultural Economist and Josh Bushong, OSU Extension Canola Specialist
- Soil Fertility and Soil Health Dr. Brian Arnall, OSU Extension Soil Fertility Specialist and Jason Warren, OSU Extension Soil Management Specialist

Every attendee will have the opportunity to hear from every speaker. In addition, OSU pest management experts Dr. Angela Post (weeds), Dr. Tom Royer (entomology), and Dr. John Damicone (plant pathology) will be available to provide advice and answer questions. They will be located at a special booth convenient for visiting with attendees.

A meal and coffee breaks are being sponsored by members of the canola industry. Time will be allotted on the program for attendees to meet with Canola College sponsors at their booths.

Register for Canola College 2015 at: <u>www.canola.okstate.edu</u>

Mike Stamm, Canola Breeder mjstamm@ksu.edu

8. Kansas weather summary for December 2014: Milder trend

December 2014 was much milder than November in Kansas. With the mild weather came clouds. This December saw an average of just 57 percent of the possible sunshine. In comparison, last year that average was 79 percent of possible sunshine. Statewide temperatures averaged 34.6 degrees F, which was 2.6 degrees warmer than normal. The Northwest Division came closest to average at 29.9 degrees, or 0.9 degrees warmer than normal. The Southwest Division saw the greatest departure. The average temperature for December in that region was 33.6 degrees, or 3.7 degrees warmer than normal. The warmer-than-average temperatures didn't mean that the month was without cold weather. All divisions reached lows in the single digits. The coldest reading occurred at the end of the month, as an Arctic front issued in the New Year. The coldest reading was -16 degrees at Brewster, in Thomas County, on the 31st. North Central Kansas also had lows in the double digits below zero. Subzero readings were also recorded in the West Central, Central, and Northeastern divisions.



Statewide average precipitation was 1.20 inches, which was 118 percent of normal. Unfortunately, that excess only equals 0.17 inches. The West Central and North Central Divisions averaged below normal for the month, while the Northwest and Southwest divisions tied for the greatest percent of normal at 157 percent in both divisions. The departure from normal was slight in actual amounts at 0.38 inches in the southwest and 0.24 inches in the northwest.





There was one snow event, but amounts were generally not troublesome. As typical, December was quiet on the severe weather side. There was only one report of severe weather in December: a rare winter tornado. This was an EF0 tornado reported in Harper County on the 14th. This is only the sixth December since 1950 to record a tornado.



Drought conditions persist across the state, particularly in the west. There was some degradation in the eastern portions of the state. By the end of November, the drought-free area of Kansas had shrunk to 29 percent. This dropped another 10 percent in December. The fact that December is generally one of our drier months means that even above-normal precipitation has only limited benefits. However, a continued dry pattern is likely to result in further expansion of drought in the North Central Division.

The likelihood of an El Niño/Southern Oscillation (ENSO) continues to diminish. It is still expected to switch to an El Niño event, 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 January temperature outlook is neutral for most of the state, with cooler-than-normal temperatures for the northwestern areas. The precipitation outlook is also neutral, with precipitation equally likely to be above normal, normal, or below normal.



December 30, 2014

(Released Wednesday, Dec. 31, 2014) Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0	D1	D2	D3	04
Current	19.49	43.02	19.18	16.05	2.25	0.00
Last Week 12232014	19.49	43.02	19.18	16.05	2.25	0.00
3 Months Ago 500/2014	18.51	35.36	26.63	17.13	2.37	0.00
Start of Calendar Year 12012013	4.71	48.37	13.04	28.30	5.58	0.00
Start of Water Year scocord	18.51	35.36	26.63	17.13	2.37	0.00
One Year Ago 12012013	4.71	48.37	13.04	28.30	5.58	0.00

Author: Brad Rippey U.S. Department of Agriculture



http://droughtmonitor.unl.edu/

Intensity:

D0 Abnom aily Diry

D1 Moderate Drought

D3 Extreme Drought D4 Exceptional Drought

D2 Severe Drought Drought Monitor focuses on broad-scale conditions

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



Dec 2014

Kansas Climate Division Summary

	Precipit	ation (in	ches)		Temperature (°F)						
	Dec 201	4		Jan thro	Jan through Dec 2014 Moi					onthly	
Division	Total	Dep. ¹	% Normal	Total	Dep. ¹	% Normal	Ave	Dep. ¹	Max	Min	
Northw est	0.83	0.26	153	16.89	-4.47	79	29.9	0.9	71	-18	
West Central	0.54	-0.09	88	19.84	-0.93	94	32.4	3.0	65	-7	
Southw est	1.05	0.38	153	18.33	-1.57	91	33.6	3.7	60	2	
North Central	0.66	-0.22	71	22.81	-5.20	80	32.3	1.7	74	-13	
Central	1.33	0.40	139	26.03	-3.26	89	34.3	2.9	64	-7	
South Central	1.25	0.13	113	25.30	-6.02	80	34.7	3.1	63	1	
Northea st	1.36	0.14	110	28.98	-6.02	82	35.1	2.4	70	-6	
East Central	1.84	0.44	130	27.70	-10.22	72	36.0	2.7	63	3	
Southea st	1.85	0.03	103	31.33	-10.16	75	37.4	3.3	67	3	
STATE	1.20	0.17	118	24.07	-5.31	82	34.0	2.6	74	-18	

1. Departure from 1981-2010 normal value Source: KSU Weather Data Library

Mary Knapp, Weather Data Library <u>mknapp@ksu.edu</u>

9. Year-end summary of Kansas weather in 2014: From windy to wet

In 2014, the year started with a dry and windy pattern. From January to May, 2014 ranked as the second driest start to the year since 1895. Temperatures fluctuated considerably during the year, with the temperatures ranging from 111 degrees F at Great Bend on August 23 to -18 degrees at St. Francis on December 31st. The average temperature for 2014 was 53.5 degrees, which ranked as the 36th coldest year since 1895. All divisions had temperatures exceed the 100-degree mark. All divisions also had temperatures plunge below zero. The average date for the last spring freeze was April 28th. The earliest start to the growing season was a last freeze on April 14th at various locations. Half of the stations reported a last freeze after the 1st of May, with widespread temperatures of 32 degrees or lower in western Kansas from May 13-15. The first fall freeze was also early in parts of the state. The average date was October 13th, but there were widespread reports of freezing temperatures in north central Kansas on September 13th. The latest first frost was reported at Elkhart on November 11th when temperatures plunged to degrees. The average length of the growing season was 178 days. The shortest growing season was in the North Central Division, where several stations reported 118 days. Not surprisingly Elkhart, with the late end start, had the longest growing season at 208 days.



Moisture also had a sharp contrast during the year. As mentioned earlier, the first 5 months of the year were the 2nd driest on record. The statewide average precipitation for 2014 was 25.41 inches. For 2014, the statewide average ranked 45th out of 120 years, placing it on the dry side of the middle of the range. One of the biggest contrasts was the timing of the moisture. March to May statewide precipitation averaged 4.04 inches, which was just 46 percent of the normal. During the critical summer months the pattern was reversed. The Jun-Aug precipitation averaged 13.03 inches, which is 117 percent of normal. The western divisions came closest to average for the year, with the West Central Division averaging 20.17 inches, or 101% of normal. The eastern division, where more moisture is typically recorded in the winter, averaged between 79 percent of normal in the southeast and 89 percent of normal in the northeast.



Snow was again a factor in 2014. The state average annual snowfall for 2014 was 21.0 inches. The greatest total was 36.7 inches reported at Atwood. Of the stations reporting snowfall, Oswego in Labette County had the lowest annual total at 8 inches.



Drought conditions shifted over the year, but ended in a similar pattern to the start of the year. While none of the state was in exceptional drought to start the year, almost 6 percent of the state was in extreme drought conditions. By the end of the year, the portion of the state in extreme drought dropped to 2 percent. Wet conditions during the summer eased the impacts significantly. By the end of the summer, most of the eastern half of the state had moved into a drought-free status. Lack of moisture in the late fall resulted in deterioration. That meant abnormally dry conditions returned to the east, and severe drought expanded again in the west. Still, the exceptional drought status was completely erased from the state, and the portion of the state in severe drought shrank substantially. Unfortunately, the continued dry conditions and below normal moisture late in the year have stalled any further improvement. Little change is expected during the winter. Normal spring rains are critical for improvement in drought conditions. The El Niño/Southern Oscillation (ENSO) that has been expected still hasn't developed and the chances of that occurring continue to decrease. The lack of a strong ENSO signal provides little guidance for the spring seasonal outlook.

U.S. Drought Monitor Kansas



Author: Mark Svoboda

National Drought Mitigation Center



http://droughtmonitor.unl.edu/

January 7, 2014 (Released Thursday, Jan. 9, 2014) Valid 7 a.m. EST

	Dro	Drought Conditions (Percent Area)					
	None	D0	D1	D2	83	D4	
Current	4.71	48.37	13.04	28.30	5.58	0.00	
Last Week 12010013	4.71	48.37	13.04	28.30	5.58	0.00	
3 Month's Ago 106.0013	48.34	11.18	8.54	27.98	3.96	0.00	
Start of Calendar Year 12010013	4.71	48.37	13.04	28.30	5.58	0.00	
Start of Water Year 101.0013	46.14	13.58	8.35	27.98	3.96	0.00	
One Year Ago 16/2013	0.00	0.00	0.00	20.64	43.39	35.97	

Intensity:

D0 Abnom ally Dry D1 Moderate Drought

D3 Extreme Drought D4 Exceptional Drought

D2 Severe Drought The Drought Monitor focuses on broad-scale conditions.

Local conditions may vary. See accompanying text summary for forecast statements.



January 6, 2015 (Released Thursday, Jan. 8, 2015)

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0	D1	D2		04
Current	19.49	43.02	18.91	16.71	1.88	0.00
Last Week 12092014	19.49	43.02	19.18	16.05	2.25	0.00
3 Month's Ago 107.2014	24.89	30.35	25.25	17.25	2.25	0.00
Start of Calendar Year 12002014	19.49	43.02	19.18	16.05	2.25	0.00
Start of Water Year 9002014	18.51	35.36	26.63	17.13	2.37	0.00
One Year Ago 1/7/2014	4.71	48.37	13.04	28.30	5.58	0.00
D0 Abnom ally Dry D3 Extreme Drought						

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

Severe weather was a factor in 2014, but the tornado season was less active than in previous years. Preliminary numbers from the Storm Prediction Center (SPC) show a total of 48 tornadoes in 2014. This compares to a five-year average (2008-2012) of 116 tornadoes. There was a rare December tornado, but no damages or injuries were reported. There were 534 hail reports and 649 reports of damaging winds. August was a major month for hail. Crop damages in excess of 5 million dollars were reported, with 2 million dollars' worth reported in Jewell County on the 9th of August. According to the National Climatic Data Center (NCDC) storm database, there were 107 flood or flash flood events affecting over 36 counties through the end of September 2014. Preliminary damage reports total to property and crops from the floods was over 5.5 million dollars. Generally, these property and crop damage reports are underestimated. In many cases, crop damage isn't immediately available and fails to be included in the storm total. Likewise, in property damage that is from uninsured losses often is also missing in the overall total. There was only one excessive heat event reported in 2014. That was an incident in Wichita, where a child was left in a vehicle, and died from the heat. In contrast, there were 50 excessive heat events reported in 2012, affecting 30 counties. There were two major cold outbreaks in the first half of the year. These occurred on January 6th, and February 5th. Recent cold has not yet been included in the storm database.

Annual Severe Weather Report Summary - 2014

* Data is preliminary and subject to revision



http://www.spc.noaa.gov/

2014 Annual Summary

Kansas Climate Division Summary

	Precipitation	on (inches)		Temperature (°F)				
	2014					Monthly Ex	tremes	
Division	Total	Dep. ¹	% Normal	Ave	Dep. ¹	Max	Min	
Northwest	19.83	-1.11	94.7%	51.5	-0.6	107	-18	
West Central	20.24	0.11	100.6%	52.9	-0.5	106	-13	
Southwest	19.05	-1.04	94.8%	54.7	-0.4	107	-13	
North Central	24.06	-3.47	87.4%	52.2	-1.2	108	-12	
Central	26.53	-2.08	92.7%	53.9	-1.0	111	-14	
South Central	25.11	-4.10	86.0%	55.2	-1.2	107	-15	

Northeast	31.20	-4.02	88.6%	52.0	-1.4	107	-15
East Central	31.34	-6.73	82.3%	53.5	-1.5	104	-14
Southeast	31.98	-8.31	79.4%	55.2	-1.6	106	-15
STATE	25.41	-3.37	88.3%	53.5	-1.0	111	-18

1. Departure from 1981-2010 normal value

Source: KSU Weather Data Library

Weather Stories by Month for 2	2014
Month	Events
January	Rapid swings in temperature and strong winds were the major fe
	storm events reported were winter storms, there was a dust storr
	caused an 11-car accident with 3 fatalities. On the other side of the
	reported a wildfire that caused 100,000 dollars in damages.
February	Winter weather was the big culprit. On February 3rd, a storm syst
	the time the system exited, over 12 inches of snow had fallen. Mo
	in damages were reported. Wichita had more than 100 accidents
March	This was a relatively quiet month. A winter storm started the mor
	colder- and drier-than-normal conditions. High winds, hail, and d
	common severe weather events.
April	April had a mix of challenging weather as the drought continued
	weather aggravated the dry conditions in western and central Ka
	accidents were attributed to low visibility due to blowing dust. In
	temperatures April 13-15th provided an additional blow to alread
	Temperatures in the mid-20s reached most of the state, while in t
	central, temperatures plunged into the teens. There were several
	north central Kansas that reported more than five hours with tem
	degrees, which can cause significant damage to the wheat. The f
	a severe weather outbreak that produced a tornado in Baxter Spi
	injuries and 10 million dollars in damages. The system also produ
	portion of northeast Kansas, which resulted in isolated flooding.
	storm reports for April included 5 tornadoes, 97 hail events, and 2
Мау	May was a month of extremes. Temperatures ranged from a high
	on the 20th to a low of 25 degrees at Wilmore in Comanche Cour
	stations reported the highest temperature and the lowest tempe
	Windy weather continued to aggravate the dry conditions in wes

Kansas State University Department of Agronomy

2004 Throckmorton Plant Sciences Center | Manhattan, KS 66506

	The month ended with a widespread precipitation event. Some s
	ast three days of the month as they had in the previous three mo
	average precipitation, at 4.80 inches, made this is the second drie
	record. The driest was in 1966, when the Jan-May total was 4.16 in
June	Much of Kansas was wetter-than-normal in June. Statewide, the a
	7.25 inches, which places it as the fifth wettest June since 1895. June since 1895. June since 1895. June since
	month of the year, with storm events reported on 25 of the 30 da
	weather was also a feature for the month. There were 21 tornado
	fortunately no fatalities. Hail and damaging winds were even mo
	159 reports of hail damage and 310 reports of wind damage. Give
	surprising that flooding was also an issue in many locations. Gard
	hard hit on the 28th after an early morning storm dumped over 4
	saturated ground. More than 10 million dollars in property and cr
July	The wet weather in June shifted to much drier conditions in July.
	southwest and south central Kansas. These divisions had much n
	surprisingly, severe storms were also less prevalent. No tornadoe
	There were 26 hail events and 74 damaging wind events.
August	In general August was warmer than average and drier than avera
	to the pattern. The Northwest Division had the coolest temperate
	averaging below normal. It was also the month of hail. More than
	damage was reported, with 2 million reported in Smith County of
September	An early freeze in parts of the state was the major feature in Septe
	incursion of cold air occurred between the 12th and 14th. Alton,
	low for the month at 29 degrees on the 13th. Emporia set a recor
	September with 35 degrees, again on the 13th.
October	October began the month on a cool, wet note but then moved to
	Overall, the statewide average temperature was 2.9 degrees warr
	were no tornadoes, 34 hail events, and 13 high wind events.
November	The major weather story in November was the abrupt arrival of w
	extremely cold temperatures. The chill started on the 11th, when
	80s. In western Kansas, Tribune went from a high of 76 degrees o
	on the 13th. Low temperatures below zero were common in the
	with low temperatures in the single digits reaching as far as Colu
	Statewide average temperature was 38.1 degrees, or 4.5 degrees
	were no reports of tornadoes, hail or high winds.
December	The big story for December was the tornado on December 14th r
	as an EF0, and no damage was noted. While a weak tornado, this
	1950 that a tornado was recorded in December. The monthly ave
	warmer than normal, but the month ended on a cold note. The co
	was reported at St. Francis on December 31 st as -18 degrees. Clou
	significant feature of the month. Based on the Mesonet stations,
	average of just 57 percent of the possible sunshine. In compariso
	was 79 percent of possible sunshine.

Mary Knapp, Weather Data Library <u>mknapp@ksu.edu</u>

10. Comparative Vegetation Condition Report: December 23 - January 5

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 25-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:

Kansas Vegetation Condition

Period 01: 12/23/2014 - 01/05/2015



Figure 1. The Vegetation Condition Report for Kansas for December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that only a small portion of southeast Kansas missed out on snow during the period. The greatest snow cover, as of January 8th was in the center of the state.

Kansas Vegetation Condition Comparison



Late-Dec/Early-Jan 2015 compared to the Late-Dec/Early-Jan 2014

Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for for December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that a section of central through northeast Kansas has much higher NDVI readings. This area has had more favorable temperatures and moisture than last year at this time.

Kansas Vegetation Condition Comparison



Late-Dec/Early-Jan 2015 compared to the 26-Year Average for Late-Dec/Early-Jan

Figure 3. Compared to the 26-year average at this time for Kansas, this year's Vegetation Condition Report for December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that most of the state has close to normal NDVI readings. The Southwestern and South Central Divisions have the biggest increase over the average. Favorable moisture in December has been beneficial.



Figure 4. The Vegetation Condition Report for the Corn Belt for December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that snow cover missed the extreme southeastern portions of the region. Snow coverage is increasing in the Northern Plains, where some locations have had the latest start to snow cover in recent memory.



U.S. Corn Belt Vegetation Condition Comparison Late-Dec/Early-Jan 2015 Compared to Late-Dec/Early-Jan 2014

Figure 5. The comparison to last year in the Corn Belt for the period December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that there is an area of higher NDVI readings from central Kansas through eastern lowa and southern Wisconsin. Snow depth in these areas is lighter than last year at this time. In the Panhandle of Nebraska, however, maximum snow depth for the period averaged 8.4 inches, with the highest total reported as 17 inches at Dalton. Last year, for the same period the average maximum depth was 1.3 inches, and the greatest depth was just 2 inches (reported at multiple locations)..



U.S. Corn Belt Vegetation Condition Comparison Late-Dec/Early-Jan 2015 Compared to the 26-Year Average for Late-Dec/Early-Jan

Figure 6. Compared to the 26-year average at this time for the Corn Belt, this year's Vegetation Condition Report for December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that there is a significant area of below-average NDVI readings, particularly in South Dakota and parts of Nebraska, where snow coverage is greater than usual. Higher-than-average NDVI readings are most prominent in northern Minnesota and southern Wisconsin.



Continental U.S. Vegetation Condition Period 01: 12/23/2014 - 01/05/2015

Figure 7. The Vegetation Condition Report for the U.S. for December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that snow coverage penetrated south to central Texas. Snow in the southern areas was short-lived. It is also noticeable that the snow levels along the West Coast are higher than is typical. Despite the notable storm in Southern California, most of the snow occurred at higher elevations, with rain at the mid and lower levels.



Continental U.S. Vegetation Condition Comparison Late-Dec/Early-Jan 2015 Compared to Late-Dec/Early-Jan 2015

Figure 8. The U.S. comparison to last year at this time for the period December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that NDVI readings are lower in the Mountain West and northwestern Nebraska. On January 5, 2015 the average snow depth in the Northwest was 11.6 inches, with 48 percent coverage. Last year, the average snow depth was 6.5 inches and the coverage was just 27 percent.



Figure 9. The U.S. comparison to the 26-year average for the period December 23 – January 5 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that much higherthan-average NDVI values are concentrated on the West Coast and New England. Lower-thanaverage values are centered in the Northern Plains, in South Dakota and Nebraska. Wet conditions along the Pacific Northwest, along with the higher elevation levels for the transition from rain to snow have allowed for greater NDVI values in these areas. In the Northeast, snow coverage and depths are less than last year at this time. Current snow coverage is 75 percent with an average depth of 7 inches. Last year, coverage was 100% with an average depth of 15 inches.

Mary Knapp, Weather Data Library mknapp@ksu.edu

Kevin Price, Professor Emeritus, Agronomy and Geography, Remote Sensing, GIS <u>kpprice@ksu.edu</u>

Nan An, Graduate Research Assistant, Ecology & Agriculture Spatial Analysis Laboratory (EASAL) nanan@ksu.edu

11. December cloud cover in Kansas

It was unusually cloudy in December across much of the United States. So much so that some industries and even people were influenced by the persistent cloud cover. The Kansas Mesonet (mesonet.ksu.edu), like everything else, was also subject to these dark times. These weather stations were able to capture clouds via solar radiation measurements.

During the day, if clouds are present, more solar radiation from the sun is reflected back into the atmosphere, not reaching the surface. Some of our Mesonet stations have been around for more than 20 years, observing long-term trends in cloud cover from surface radiation. One of these long-term stations is located at the Agronomy North Farm, Manhattan. In December for the last 28 years, the station has averaged 201.6 MJ/m2 for the month. However, in December 2014, we received 154.3MJ/m2, only 76.5% of our average solar radiation. To put this into perspective – the last (and only other) time it observed less than 160MJ/m2 was 1995. Only 9 times in last 28 years were below 180MJ/m2. December 2013 was very sunny compared to average, receiving a total of 239.7MJ/m2.



Figure 1. 2014 is the 2nd least solar radiation observed in Manhattan mesonet during the month of December.

On a typical day in December the computed maximum possible daily radiation is 10MJ/m2. The average Dec day realized radiation is 6.5MJ/m2 over the last 28 years. In 2014, we only had about 5MJ/m2 each day. With an average of 9.5 hours of daylight each day, that means we lost almost three hours of sunlight lost due to cloud reflection/refraction each day.

Clouds were not only confined to the Manhattan area. Much of eastern Kansas was also subjected to widespread, persistent cloud cover. Parsons, another 28-year station, had the lowest monthly total of solar radiation of all time, 135MJ/m2. That is only 63 percent of the historical average at this station.



Figure 2. Mesonet at Parsons observed the lowest ever radiation in Dec 2014.

Meanwhile, in western Kansas, December was more average, with the Colby site observing 90 percent of its 28-year average, 253.3MJ/m2. Typically, clouds tend to be less persistent across western Kansas in all months, as was the case in December.



Figure 3. Colby mesonet site has a higher average Dec radiation, with no substantial decrease in 2014 due to clouds.

Other than just causing gray days, clouds also have an impact on temperatures. Low temperatures were warmer (2-7 degrees F) than normal. This is because clouds keep longwave radiation concealed to the surface, especially at night. Usually this radiation can escape into the atmosphere, cooling the surface. Other impacts felt across Kansas include: solar panels not operating correctly, light winds, damp conditions, and maybe even mood changes!

Chip Redmond, Weather Data Library christopherredmond@ksu.edu