k-state extension AGRONOMY e-Updates

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1. Diseases on corn, grain sorghum, and soybeans in Kansas in 2011

Corn Diseases

The 2011 growing season presented some interesting challenges for Kansas corn growers. Areas generally north of U.S. Hwy 24 received good to excellent rainfall throughout much of the growing season. While gray leaf spot was generally less severe than the past few years, there were some fields where the severity was significant enough to warrant a fungicide application. As harvest approached, anthracnose stalk rot, a disease often found in wetter years, was prevalent in a number of fields. Fusarium stalk rot could also be found.

Goss's bacterial wilt continued to increase in both incidence and severity across Kansas, especially in areas of higher rainfall or in fields grown under sprinkler irrigation. Goss's wilt is typically more severe in fields that are in continuous, no-till corn and that have received injury due to hail or sandblasting. The disease has spread rapidly across the Corn Belt in recent years and scientists are trying to determine the reasons for the rapid increase.

Goss's wilt on corn. Photo by Bob Harveson, University of Nebraska-Lincoln.

In the southern production areas of the state, drought and heat stress severely impacted yields and disease as well. Aspergillus ear rot, the producer of aflatoxin, was at its highest level in many years. South of I-70, it was found in 100 percent of the fields sampled. Fortunately, aflatoxin amounts were generally at levels where the elevators would accept the grain without penalty, but some loads were docked for excessive levels, and a few loads were simply rejected. Because of the dry conditions, charcoal rot was also prevalent in most non-irrigated fields.

On a positive note, because of the drought in Texas and Oklahoma, southern rust was at its lowest level in many years. Other diseases identified in 2011 include Diplodia ear rot, lesion nematodes, common smut, and holcus spot.

Grain Sorghum Diseases

Overall disease incidence and severity in grain sorghum was much less than in any recent year, due in large part to the severe drought in much of the state. The most significant disease issue in grain sorghum in 2011 was Fusarium stalk rot. It was particularly common in north central and central Kansas.

There were some anomalies, however. In Marshall County and the surrounding counties, high levels of sooty stripe were present in fields planted to susceptible hybrids. Sooty stripe is favored by frequent rainfall and yield losses can approach 35 percent. In these same areas, grain molds could be found on susceptible hybrids.

No other diseases were a significant issue in 2011. Other diseases identified included Fusarium neck rot, charcoal rot, and bacterial leaf streak.

Soybean Diseases

Heavy rains in May and June over parts of north central, northeast, and east central Kansas resulted in the highest incidence of Pythium seedling blight in recent years. Disease pressure was so high that even where a fungicide seed treatment was used, some fields suffered significant

stand loss. Many fields required spot or complete replanting. Some fields with isolates of Pythium that tolerate higher soil temperatures continued to have problems even in to July.

Pythium blight in soybeans. Photo courtesy of Dept. of Crop Sciences, University of Illinois.

Field of soybeans in northeast Kansas, spring 2011, showing stand loss due to Pythium blight. Photo by Stu Duncan, K-State Research and Extension.

Except for areas north of U.S. Hwy 24, the rainfall was sparse in the critical months of June, July and August. Common foliar diseases such as brown spot and frogeye leaf spot were absent from most fields except along the Nebraska border. The hot, dry weather proved to be highly favorable for the development of charcoal rot, bringing statewide losses to the highest levels since 2006.

On the positive side, because of lower rainfall amounts, soybean sudden death syndrome was at its lowest level since the 2005 growing season, being confined mostly to irrigated fields with a previous history of the disease.

A statewide survey for soybean cyst nematode (SCN) started in 2011 is revealing that less than 10% of Kansas soybean fields are infested, and the majority of these have SCN levels in the range where only low to moderate losses are likely occurring. In some counties such as Cherokee County in southeast Kansas, however, the percentage of fields infested is approaching 50% -- with a few having nematode levels that are likely causing significant yield loss.

Other diseases identified in 2011 include bean pod mottle virus, Phytophthora root rot, stem canker, bacterial blight, and iron deficiency chlorosis.

-- Doug Jardine, Extension Plant Pathologist
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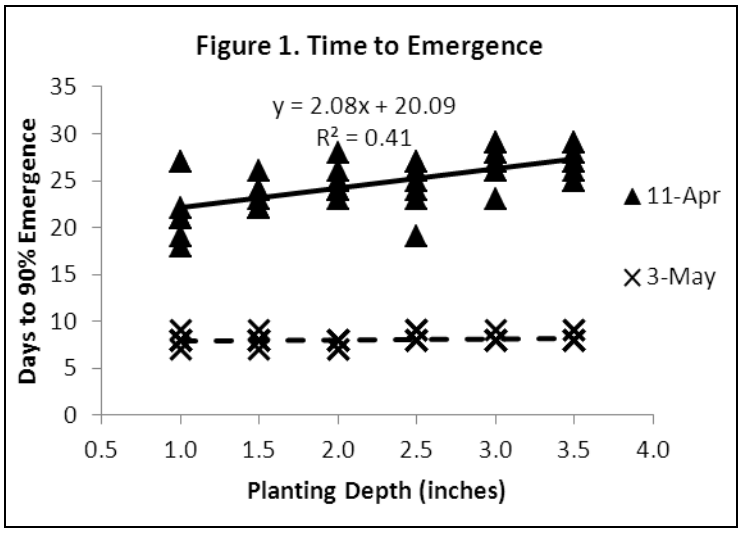
2. Seeding depth of corn

Establishing uniform stands with plants that emerge at close to the same time will increase the probability of maximizing corn yields -- assuming fertility and pest issues are addressed and the weather cooperates. Deeper planting often has been mentioned as a way to increase uniformity of emergence.

A study conducted in 2011 at Manhattan examined the impact of planting depth on speed of emergence, stand uniformity, and yield. Two hybrids each were planted at six depths, from 1 inch to 3.5 inches, on April 11. The study was repeated with a planting on May 3. The two plantings provided very different soil temperatures. The average 2-inch soil temperature for the two weeks after planting on April 11 was 61°F and was 66°F after the May 3 planting. The two hybrids responded similarly so the results below are averages of both hybrids.

Timing of emergence

Figure 1 shows that the time it took for 90% of the plants to emerge increased by about two days for every additional inch of depth in the April 11 planting. The corn planted on May 3 all emerged within 7 to 9 days of planting, regardless of planting depth. Uniformity of emergence was greatest for the 1.5- and 2.0-inch planting depths with early planting and cooler soils. With later planting and warmer soils, emergence was most uniform for the 3.0-inch planting depth, but planting depth didn’t really cause much difference in timing of emergence compared to early planting.



Stand uniformity

Figure 2 shows that plant stands declined by about 1,500 plants per acre with each additional inch of planting depth in the April 11 planting. Planting depth did not influence final stands in the May 3 planting. Stand uniformity was greatest with the 1.5-inch planting depth in the April 11 planting and the 2.5-inch depth in the May 3 planting (Table 1). In this table, the lower the number of the standard deviation, the greater the uniformity of stand.

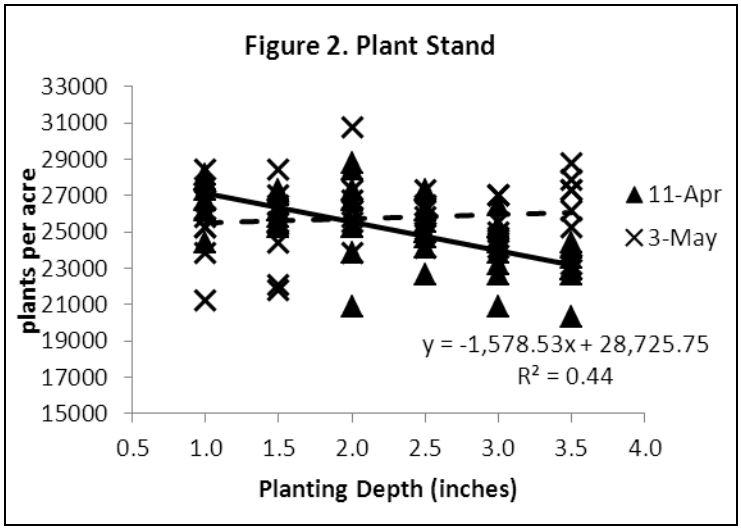


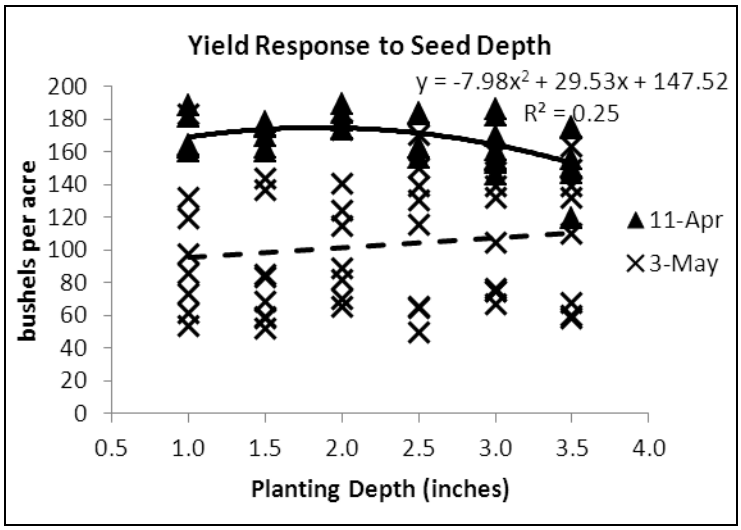
Table 1. Standard deviations for plant stand.

Depth	11-Apr	3-May
inches	Standard Deviation	
1.0	1,274	2,179
1.5	684	2,346
2.0	2,599	1,994
2.5	1,377	1,027
3.0	1,742	1,246
3.5	1,236	2,136

A number of irregular or deformed plants were noted in the April 11 planting, with a greater frequency occurring with the 3.0- and 3.5-inch depths (15% on average) compared to planting at 2.5 inches or less (3% on average). These deformations likely arose because plants at the deeper planting depths had to push leaves that were not protected by the coleoptile to the surface. Although these plants were not tracked during the rest of the season, they likely contributed to non-uniform plant development within the stand.

Yield

Figure 3 shows that yield was similar for planting depths from 1.0 to 3.0 inches, but dropped off at 3.5 inches in the April 11 planting, likely related to the lower stands associated with that planting depth. Yields were highly variable in the May 3 planting due to conditions unrelated to planting depth (heat during silking, rooting depth), but did not change appreciably with planting depth. The 1.5 to 2.0 - inch planting depths resulted in some of the most consistent yields with both planting dates.



Summary

These results support current recommendations that corn be planted at 1.5 to 2.5 inches depending on soil conditions. Corn can be planted a bit deeper than 2.5 inches and shallower than 1.5 inches in certain conditions with a minimal impact on yield.

-- Kraig Roozeboom, Cropping Systems and Crop Production Specialist
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3. USDA-Risk Management Agency Update for Kansas

Following is a summary of RMA insurance business for the 2011 crop year in Kansas.

Drought questions for 2012

1. Question: Drought Emergency Term Permits – Kansas Department of Water Resources has provided an option for producers to borrow water from their 2012 authorized quantity to

complete their 2011 irrigation water needs. Questions arise as to whether producers are eligible for prevented planting due to failure of irrigation water supply for their 2012 spring-planted crops.

Answer: If the insured chooses to use a portion of his/her 2012 allocation for 2011, then total acres of irrigated insurability would be reduced accordingly for 2012. Acreage for the 2012 crop year that could have been irrigated with water from the producer's 2012 authorized quantity if not for their management decision to borrow water to complete their 2011 irrigation water needs would not qualify for prevented planting coverage. Such acreage would not qualify because loss of the available irrigation water was due to a management decision not an insured cause of loss. In all cases involving irrigated acreage that is prevented from being planted, the insured producer must provide information supporting the claim, including, but not limited to, information regarding the amount of irrigation water that would have been available if there had been normal precipitation and inflows into reservoirs during the insurance period.

2. Question: Soil moisture conditions in southwest and south central Kansas are depleted. Although some producers may have the same overall allocation as they had in the past, they will not be able to show they can produce the yield upon which their guarantee is based using that same amount of water. Are they eligible to report all acres as irrigated and be covered for failure of irrigation supply?

Answer: The Policy states that you must have adequate water and facilities at planting time to produce at least the yield that your coverage is based on (the APH yield). In making this determination you must consider the soil moisture, available irrigation water and assume average precipitation during the growing season. Comparing the total of these 3 sources to past water use or published research data regarding water use requirements for the crop being planted should allow you to determine if you have adequate water.

To assist producers make decision regarding the number of acres they can plant under these situations, K–State Research and Extension has developed some irrigation decision tools that producers may find helpful. See:
http://www.ksre.ksu.edu/mil/
http://www.ksre.ksu.edu/pr_irrigate/

Changes for 2012

*** New Breaking**. For the 2011 crop year, the Topeka Regional Office issued over 5,600 written agreements. More than half of these were on land that had not been previously cropped in the past 3 years (excluding land emerging from CRP). These requests for coverage by written agreements, called "new breaking" agreements. For 2012, "new breaking" may not need to come in to the Regional Office under the following conditions: 1) If break out acres are less than 160 acres; 2) if broken out and prepared for planting before 11/30 in western Kansas counties; and 3) if the producer can substantiate the land has ever been broken out for crop production in the past. Evidence of the third condition can be met by providing a copy of last year's FSA-578 showing the land being broken is classified as "cropland." New breaking ground must be reported by FSA Farm, Tract, and Field (CLU) the initial year. Additional provisions also apply.

*** Cover Crops.** Cover crops are now recognized by the crop insurance program. Although not insurable, if cover crops are destroyed by the time they reach the headed or budded stage, they

may be planted during a non-cropped period without affecting the spring-planted crops insurability. (Applicable in areas without double cropping coverage)

*** Program Deletions.** Popcorn programs have been deleted from all Kansas counties.

*** Statement Changes.** The FAC and NFAC statements have been updated to include cover crops for grain sorghum and soybeans.

*** Map Changes.** Maps have been updated to incorporate written agreements, and to redraw area lines in several counties.

*** Trend-Adjusted APH Yield.** A new Trend-Adjusted APH Yield Endorsement is available in selected counties for corn and soybeans.

*** Rates and T-Yields Reviewed.** Reviewed and updated T-Yields for corn, oats, and soybeans. Reviewed and updates rates for corn, oats, and soybeans.

*** Bio-Technology Endorsement.** The Bio-Technology Endorsement has been deleted for corn.

*** Sunflowers.** A new statement for sunflowers type 048 (oil) was added for sunflower varieties bred specifically for medium seed size for hulling such as conoils. There is also a new statement for sunflowers regarding optional units by type.

Indemnity payments for Kansas in 2011

Nationwide, Kansas ranks 8th in total dollars' worth of coverage (liability) with $5.28 billion of protection provided, 6th in total premiums with $795 million, and 3rd in indemnities with $933 million paid out so far for 2011.

Payments as of January 9, 2012 by Crop in Kansas

Crop	Indemnities Paid	Net Acres
CORN	$386,723,474	4,302,563
WHEAT	$216,353,592	7,609,034
SOYBEANS	$161,532,055	3,081,829
GRAIN SORGHUM	$159,669,477	2,010,501
COTTON	$3,235,706	67,741
SUNFLOWERS	$3,076,305	90,358
POTATOES	$1,045,157	4,189
PASTURE,RANGELAND,FORAGE	$911,992	170,718
SILAGE SORGHUM	$503,194	13,077
CANOLA	$194,897	9,114

Payments as of January 9, 2012 by County in Kansas

County	Indemnities	Net Acres
Finney (055)	$32,177,125	318,328
Sumner (191)	$31,888,313	481,882
Gray (069)	$29,204,020	250,025
Haskell (081)	$26,219,457	212,353
Rice (159)	$23,665,440	245,640
Butler (015)	$23,431,201	121,514
Stevens (189)	$21,534,290	231,778
Reno (155)	$21,509,418	317,676
Scott (171)	$21,281,916	262,147
Sedgwick (173)	$21,156,388	225,512
Cherokee (021)	$19,684,701	167,908
Grant (067)	$18,902,391	157,733
Ford (057)	$18,891,946	269,137
Lane (101)	$18,355,950	170,541
McPherson (113)	$18,191,351	275,034
Harvey (079)	$18,188,724	175,329
Morton (129)	$17,132,092	155,227
Barton (009)	$16,770,738	263,622
Ness (135)	$16,401,579	174,333
Stanton (187)	$14,998,531	195,950
Marion (115)	$14,960,333	187,252
Stafford (185)	$14,674,966	228,357
Anderson (003)	$14,541,479	123,535
Pawnee (145)	$14,393,349	220,541
Labette (099)	$14,231,908	125,938
Wichita (203)	$14,087,483	237,784
Cowley (035)	$13,821,439	130,092
Crawford (037)	$13,393,272	107,822
Logan (109)	$13,330,453	240,601
Kearny (093)	$13,231,541	192,275
Thomas (193)	$11,763,762	426,662
Wilson (205)	$11,429,791	124,981
Greeley (071)	$11,238,438	244,696
Lyon (111)	$11,132,743	106,284
Gove (063)	$10,841,341	239,157
Hamilton (075)	$10,542,412	180,683
Allen (001)	$10,310,793	95,191
Hodgeman (083)	$10,262,717	142,520
Pratt (151)	$10,256,099	256,327
Harper (077)	$10,185,972	237,397
Coffey (031)	$9,919,424	99,274
Trego (195)	$9,650,024	153,918
Seward (175)	$9,192,846	152,643
Sheridan (179)	$8,937,277	262,879
Franklin (059)	$8,706,100	99,778
Montgomery (125)	$8,575,098	97,391
Edwards (047)	$8,264,834	189,700
Dickinson (041)	$8,085,333	218,649

Neosho (133)	$8,074,546	103,135
Morris (127)	$7,908,335	78,319
Osage (139)	$7,329,645	102,865
Rush (165)	$7,164,324	169,153
Woodson (207)	$6,682,322	50,496
Meade (119)	$6,167,396	152,136
Kingman (095)	$6,078,672	208,511
Linn (107)	$5,969,039	69,597
Kiowa (097)	$5,943,412	107,938
Wabaunsee (197)	$5,426,276	49,667
Ellsworth (053)	$5,284,592	119,961
Saline (169)	$5,135,702	166,995
Sherman (181)	$5,082,221	358,226
Ellis (051)	$5,078,016	133,704
Graham (065)	$4,867,067	166,482
Greenwood (073)	$4,749,203	32,703
Wallace (199)	$4,410,756	184,740
Douglas (045)	$4,163,542	52,996
Doniphan (043)	$4,002,814	135,130
Clark (025)	$3,952,700	70,550
Miami (121)	$3,951,884	57,136
Barber (007)	$3,825,809	134,405
Johnson (091)	$3,572,798	32,977
Bourbon (011)	$3,265,126	42,574
Chase (017)	$3,021,585	25,068
Lincoln (105)	$2,904,428	158,375
Shawnee (177)	$2,873,442	61,424
Comanche (033)	$2,760,115	57,825
Russell (167)	$2,642,429	106,621
Rooks (163)	$2,620,118	165,790
Ottawa (143)	$2,509,239	176,778
Osborne (141)	$2,485,193	202,020
Rawlins (153)	$2,407,197	255,192
Jewell (089)	$2,329,104	258,371
Republic (157)	$1,978,715	248,925
Leavenworth (103)	$1,965,252	41,987
Elk (049)	$1,889,796	17,423
Norton (137)	$1,757,942	199,801
Cheyenne (023)	$1,744,279	209,245
Atchison (005)	$1,682,448	112,749
Pottawatomie (149)	$1,660,588	68,796
Decatur (039)	$1,597,976	214,321
Clay (027)	$1,557,649	173,703
Mitchell (123)	$1,506,413	250,235
Wyandotte (209)	$1,424,344	5,240
Phillips (147)	$1,320,814	173,356
Smith (183)	$1,299,866	247,096
Cloud (029)	$1,249,074	196,737
Geary (061)	$1,244,334	29,952
Washington (201)	$1,199,639	245,156
Jackson (085)	$946,983	67,055

Riley (161)	$879,106	48,073
Chautauqua (019)	$865,447	10,431
Jefferson (087)	$731,716	77,149
Marshall (117)	$619,883	277,261
Nemaha (131)	$291,361	204,550
Brown (013)	$24,851	214,891
Grand Total	**$933,624,321**	**17,375,988**

As more and more claims are being processed, we are seeing the dollars increase each week. Over the past several weeks, indemnities have increased about $12 million each week.

Cause of Loss	Indemnities	Net Acres
Drought	$509,952,024	3,646,769.85
Heat	$110,668,845	553,555.49
Hail	$50,900,100	373,609.46
Hot Wind	$28,216,153	136,727.28
Flood	$8,417,771	32,295.55
Wind	$6,074,475	43,312.44
Prevented Plant	$4,489,290	39,905.52

-- USDA-Risk Management Agency Regional Office, Topeka, Kansas quarterly meeting Kansas Food and Agriculture Council, January 17, 2012

4. North Central Kansas Experiment Fields Winter Update, January 27

The North Central Kansas Experiment Fields Winter Update will be held Friday, January 27. The update will last from 9:30 a.m. to noon, and will be held in the 4-H Building at the Belleville Fairgrounds.

Topics at the update will include:

* Managing residue: Removal and vertical tillage
* Micronutrient management and tissue analysis
* Herbicide and weed resistance update
* Field research update

Lunch will be served at the conclusion of the meeting. For more information, contact Randall Nelson, Agronomist-in-Charge, at 785-335-2836, or: jrnelson@ksu.edu

-- Steve Watson, Agronomy e-Update Editor
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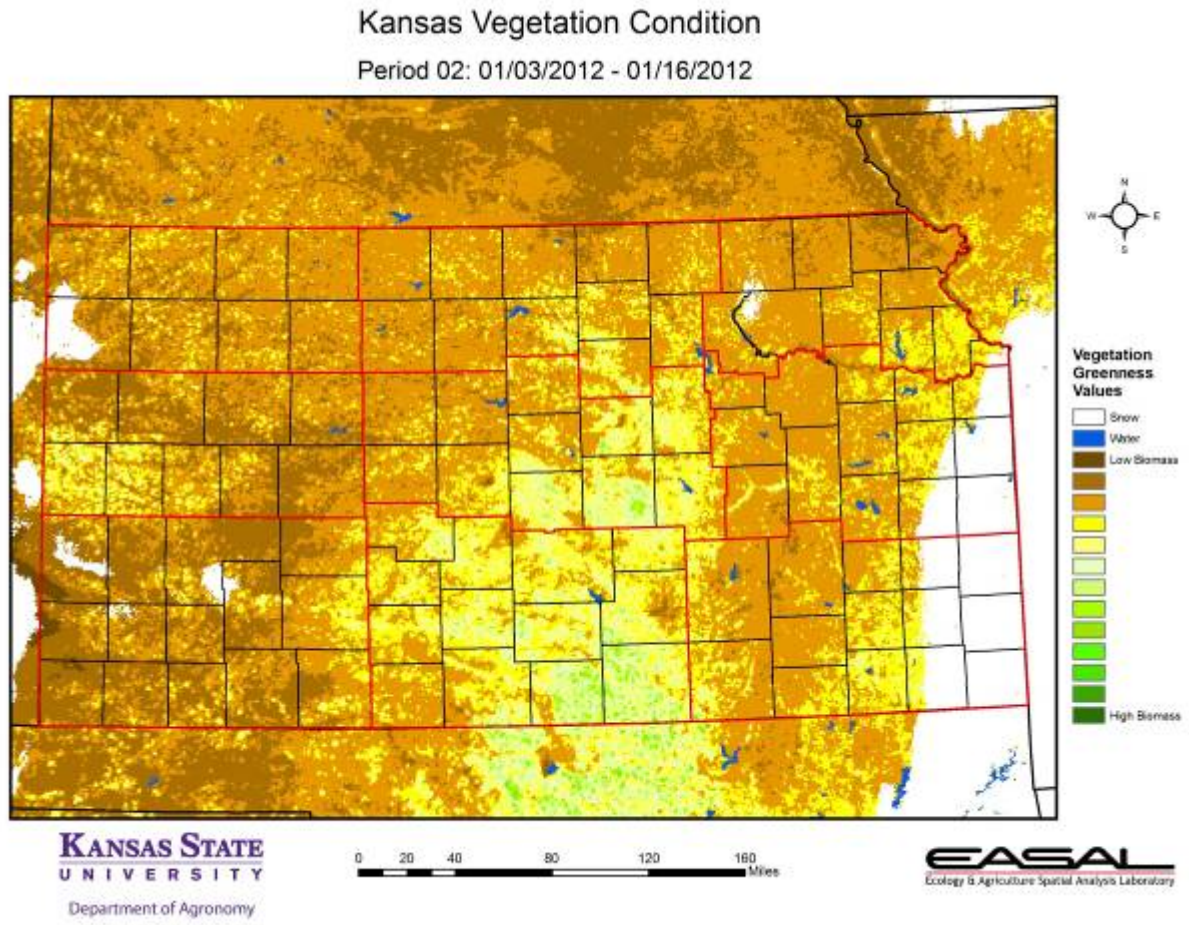
5. Comparative Vegetation Condition Report: January 3 – 16

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.

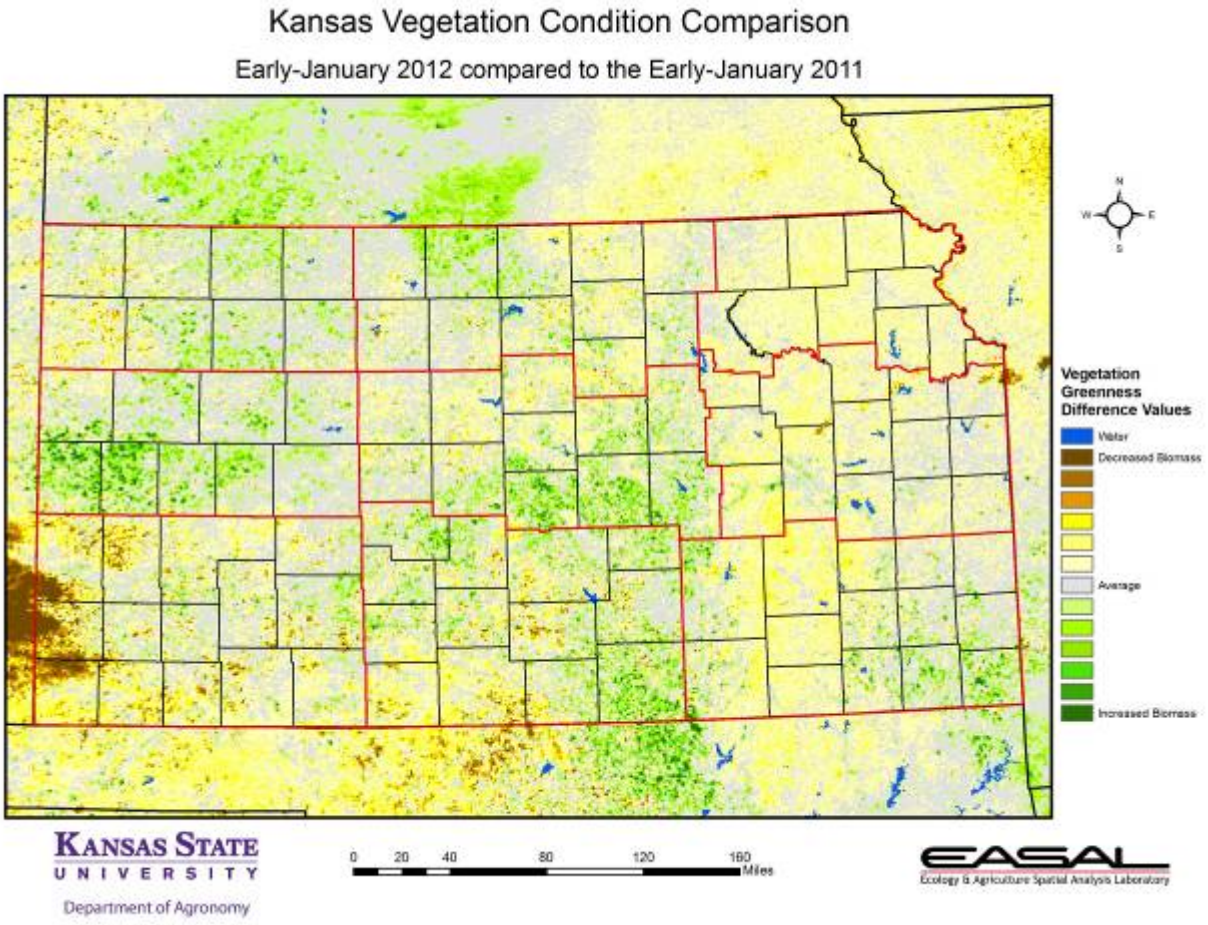
Two short videos of Dr. Kevin Price explaining the development of these maps can be viewed on YouTube at:
http://www.youtube.com/watch?v=CRP3Y5NIggw
http://www.youtube.com/watch?v=tUdOK94efxc

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 21-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.

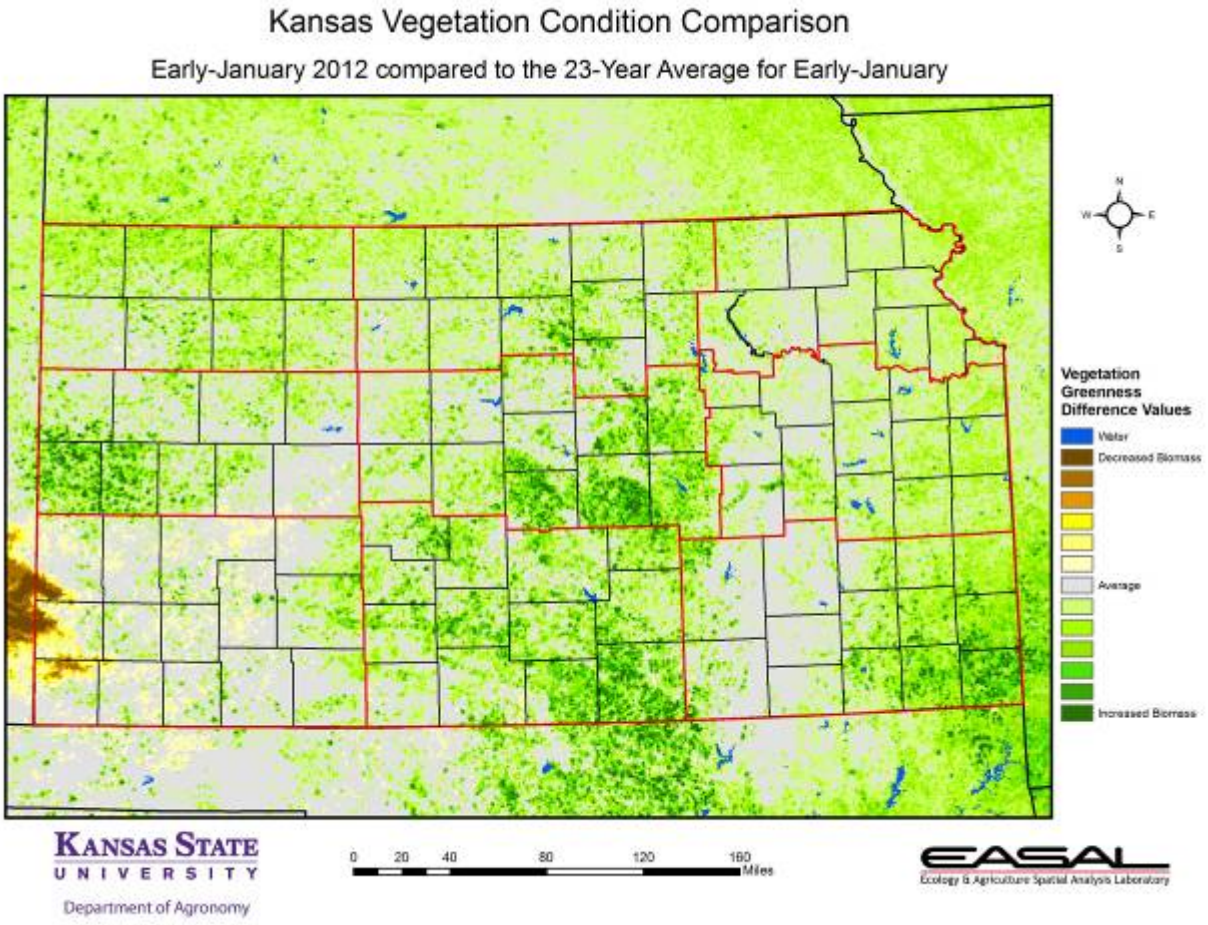
The maps below show the current vegetation conditions in Kansas, the Corn Belt, and the continental U.S, with comments from Mary Knapp, state climatologist:



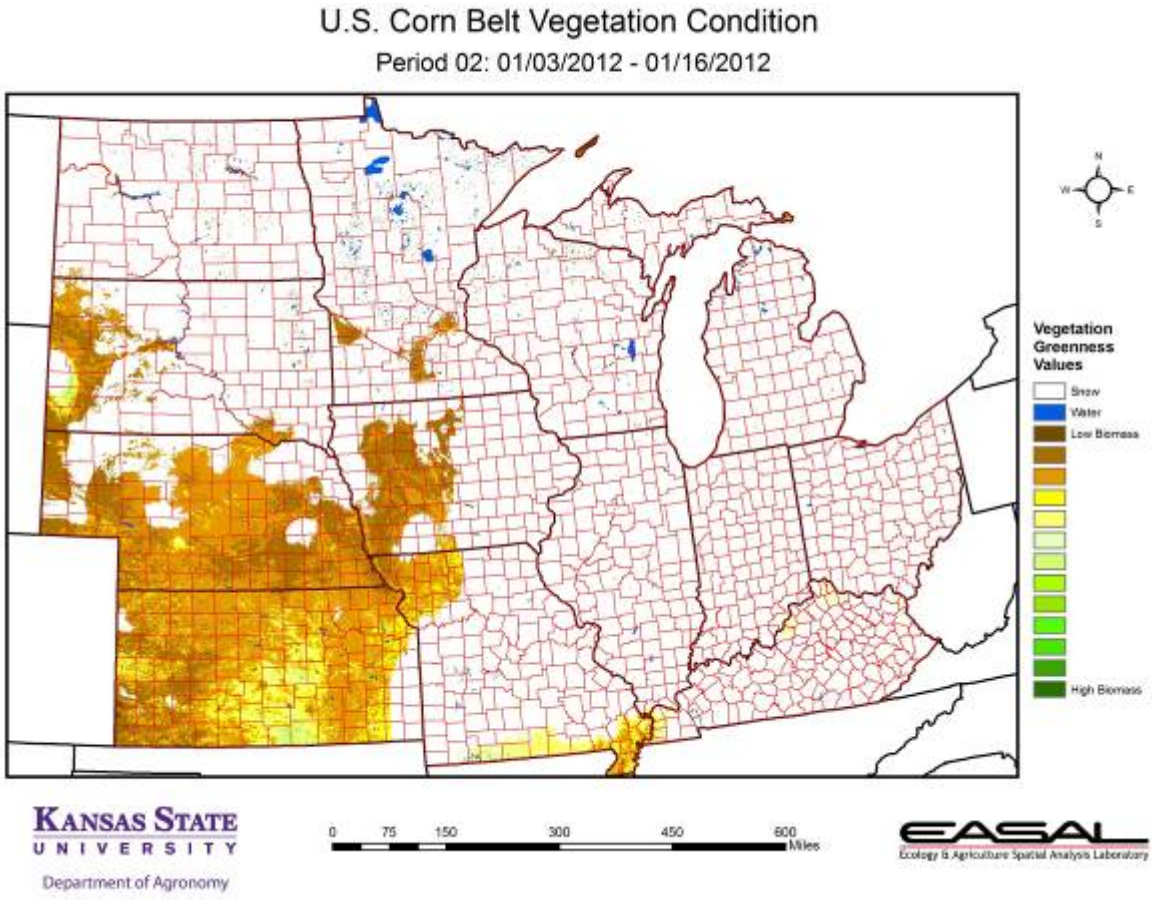
Map 1. The Vegetation Condition Report for Kansas for January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that for the first time in several reports, snow is not a major factor. Some snow cover lingered in southeast Kansas as the New Year's event moved east and some remained in southwest Kansas where snow totals were greater. Most vegetation is dormant at this time, so biomass productivity is generally light.



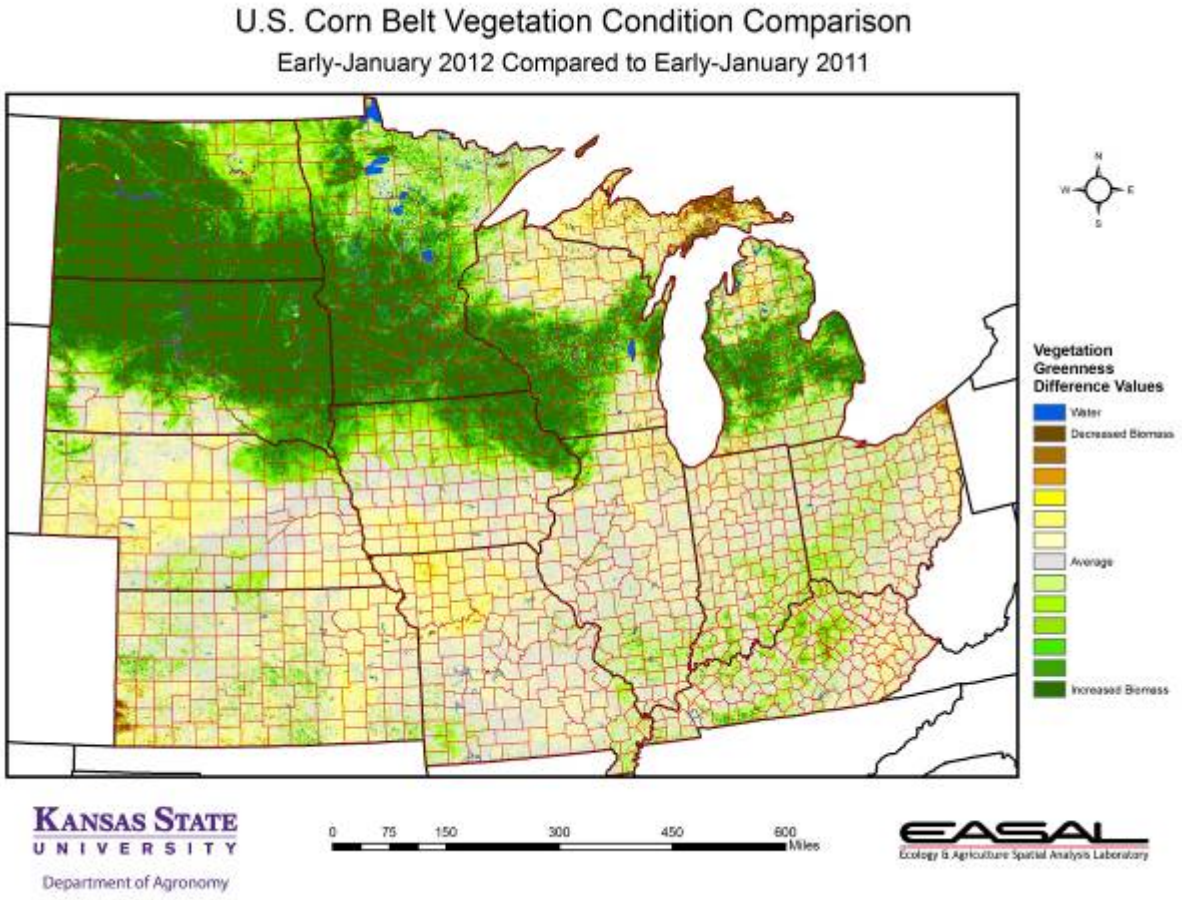
Map 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that central and west central Kansas have the greatest increase in photosynthetic activity. Winter wheat in these areas was in extremely poor condition last year. Currently, the winter wheat is rated generally in fair to good condition.



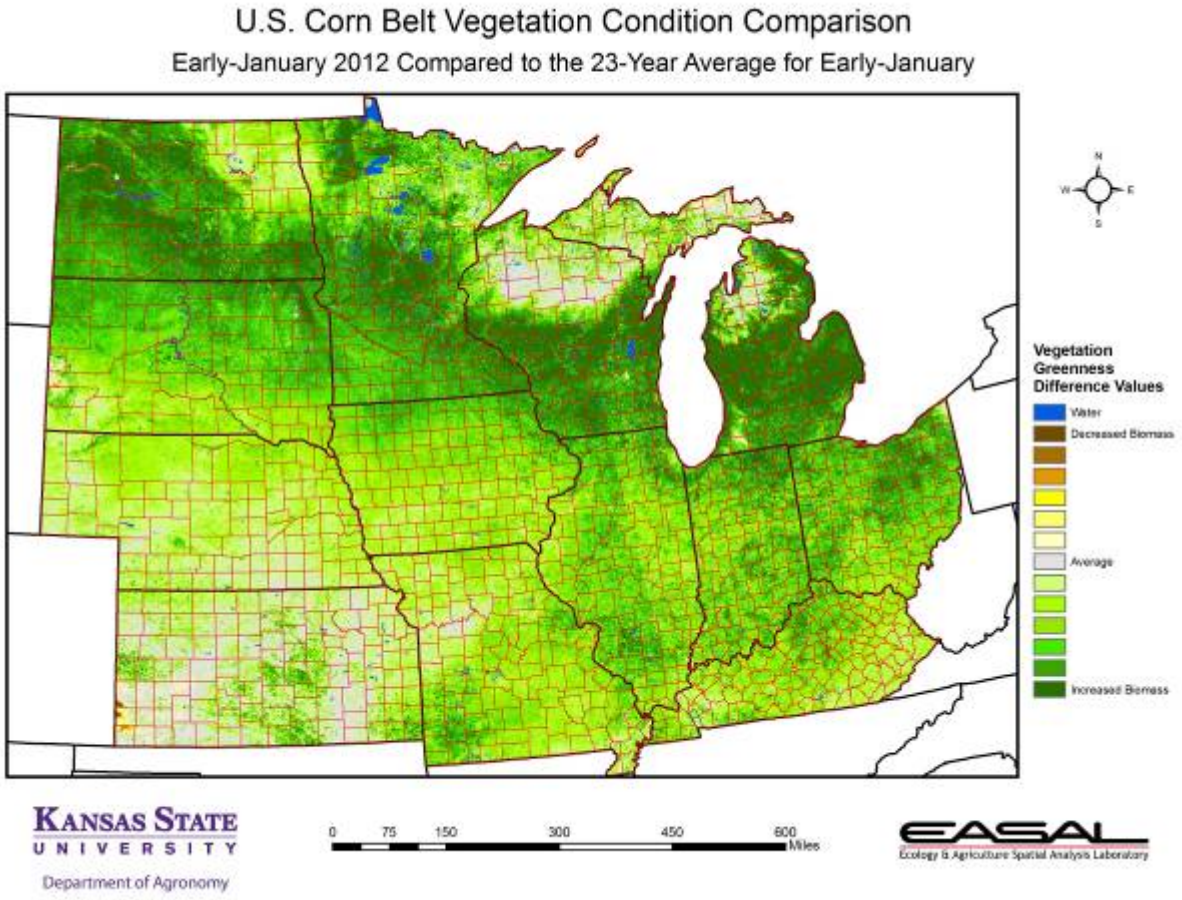
Map 3. Compared to the 22-year average at this time for Kansas, this year's Vegetation Condition Report for January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that west central, central, and south central Kansas have much above average photosynthetic activity. Mild temperatures and good moisture from December has favored wheat conditions. Limited subsoil moisture and continuing drought conditions have limited biomass production in the southwest.



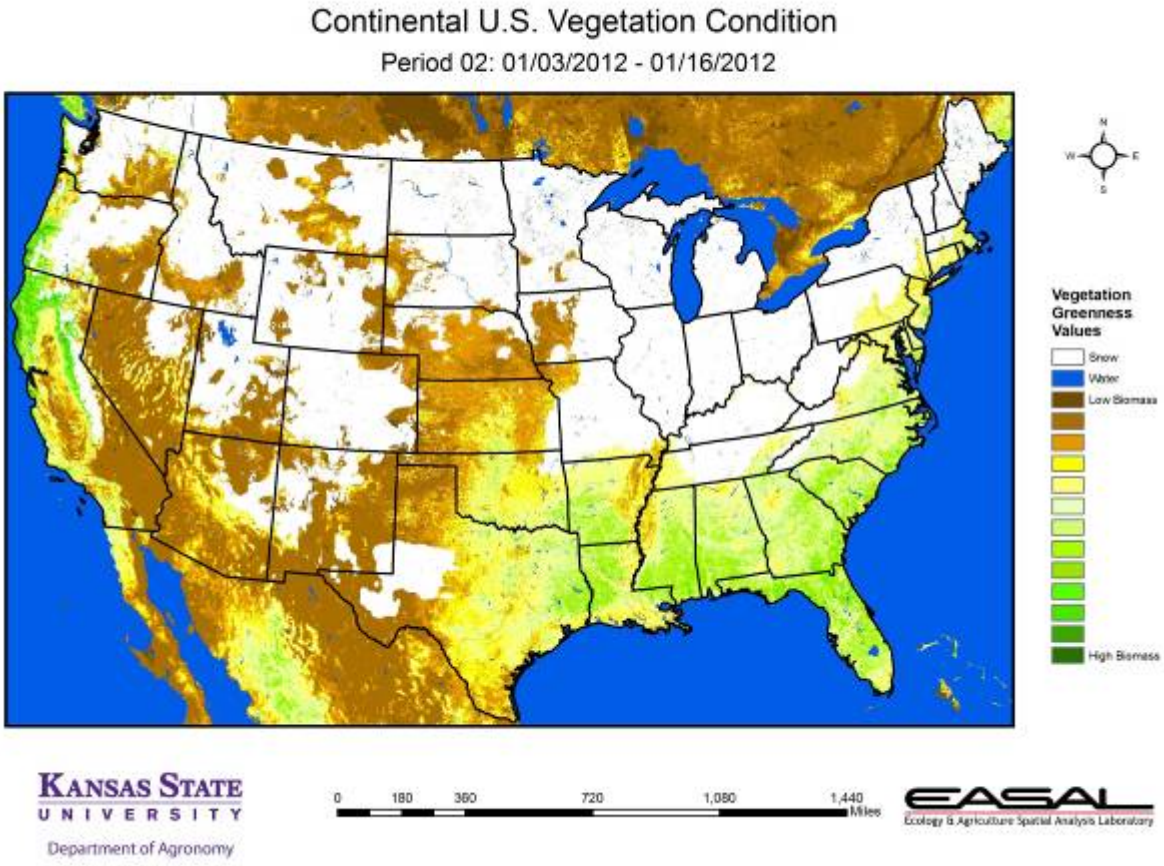
Map 4. The Vegetation Condition Report for the Corn Belt for January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the New Year has brought a return to snow in much of the Corn Belt. Snow cover is now at 95% of the Upper Midwest. This has slowed drought development, particularly in the Minnesota, Wisconsin areas.



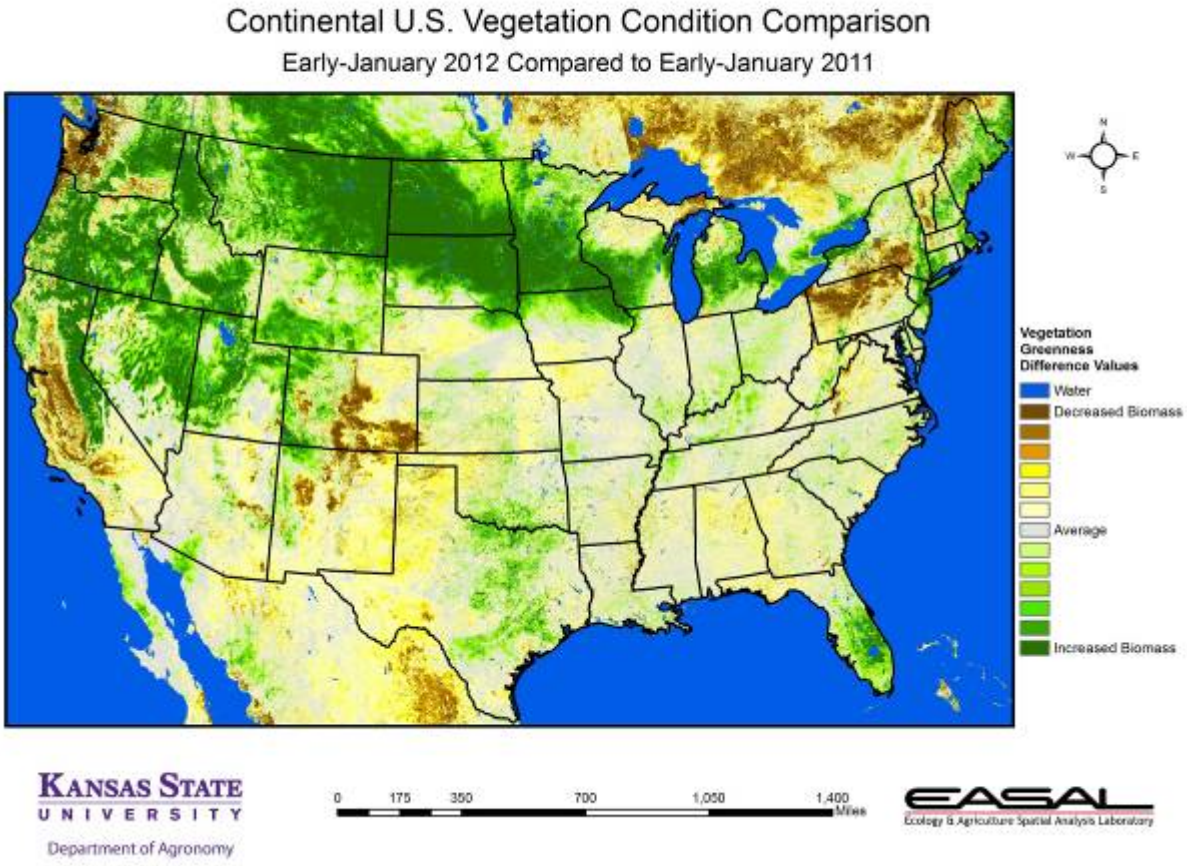
Map 5. The comparison to last year in the Corn Belt for the period January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that despite the recent snow events, general lack of snow has resulted in increased vegetation index values (Normalized Difference Vegetation Index, or NDVI) than was seen last year, particularly in the northern portion of the Corn Belt.



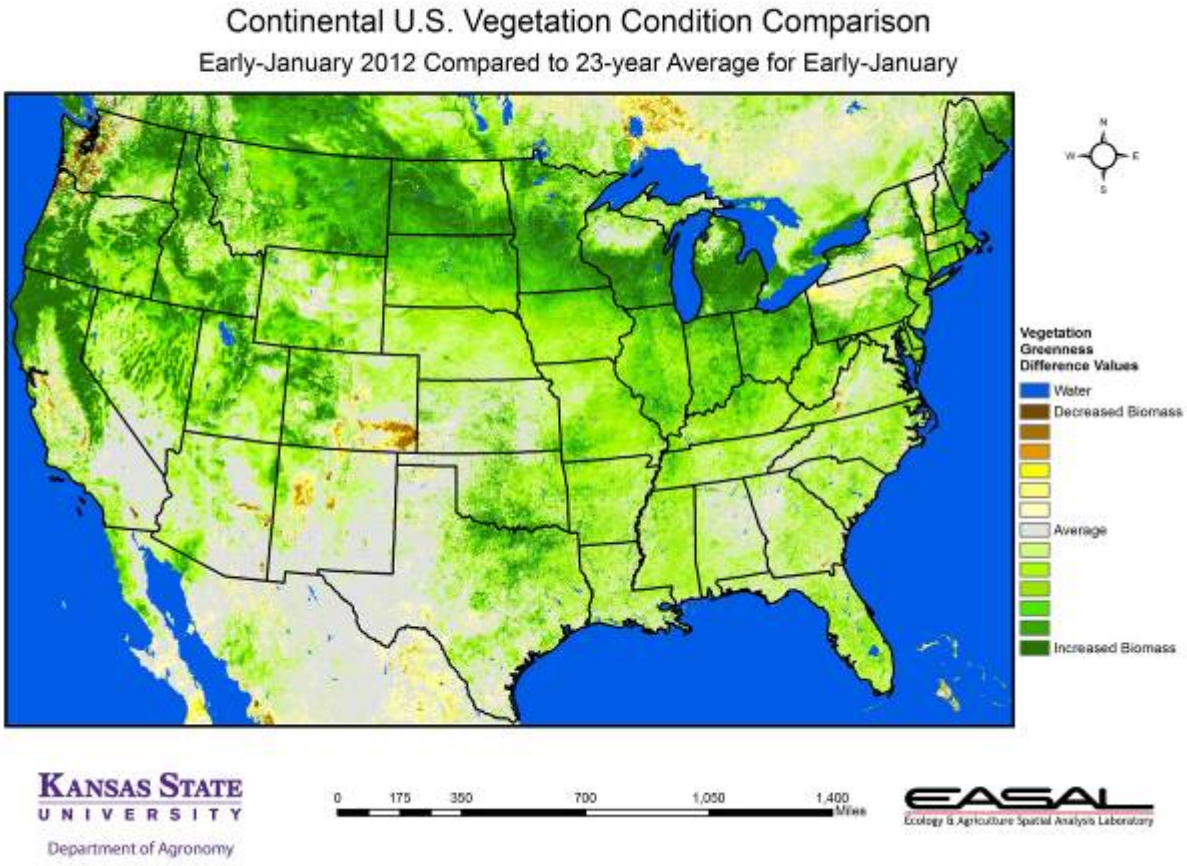
Map 6. Compared to the 22-year average at this time for the Corn Belt, this year's Vegetation Condition Report for January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that photosynthetic reflectance across the region is greater than average. Milder temperatures and more favorable moisture than average across much of the region has resulted in higher than normal normalized difference (NDVI) vegetation index values. Snow and clouds produce very low NDVI values. Vegetation, even if it is completely dormant, will have a higher NDVI value than snow and clouds. So even though the NDVI reading in the northern Corn Belt is high relative to the 22-year average, the absolute level of photosynthetic activity is still very low in this area.



Map 7. The Vegetation Condition Report for the U.S. for January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that snow influence has switched from the Southern Plains to the northern regions. The Texas Panhandle continues to show some snow influence during the period. Midland, Texas is on pace to have a record seasonal snowfall. Return of snow to the New England area has been welcome.



Map 8. The U.S. comparison to last year at this time for the period January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows greatest increase in photosynthetic activity is visible in the Northern Plains. Much of this can be explained by the decrease in snow cover this year compared to last. Lack of snow cover has contributed to increased fire danger to the region.



Map 9. The U.S. comparison to the 22-year average for the period January 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the northern areas of the country have greater-than-average photosynthetic activity due to less snow than average. In eastern Oklahoma, northern Texas and southern Missouri, the increased photosynthetic activity is due primarily to favorable moisture in December as well as milder–than-average temperatures during early January.

Note to readers: The maps above represent a subset of the maps available from the EASAL group. If you'd like digital copies of the entire map series please contact us at kpprice@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.

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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.
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