



Extension Agronomy

eUpdate

05/08/2015

These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, Jim Shroyer, Crop Production Specialist 785-532-0397 jshroyer@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Large-scale dryland cropping systems research at Tribune: 2008-2014 results

A large-scale rainfed cropping systems research and demonstration project has been underway since 2008 at the Southwest Research-Extension Center station in Tribune to evaluate several alternative systems that are more intensive than two- or three-year rotations. We are testing two summer crops (corn and grain sorghum) along with winter wheat in crop rotations varying in length from 1 to 4 years.

The crop rotations in the test are:

- Continuous grain sorghum
- Wheat-fallow, wheat-corn-fallow
- Wheat-sorghum-fallow
- Wheat-corn-sorghum-fallow
- Wheat-sorghum-corn-fallow

The objective of the study is to identify cropping systems that enhance and stabilize production in rainfed cropping systems to optimize economic crop production. Averaged across the past six years, wheat yields tended to be less in four-year rotations than in two- and three-year rotations. Corn and grain sorghum yields (six-year average) were about twice as great when following wheat than when following corn or grain sorghum.

The objectives of the study are to (1) enhance and stabilize production of rainfed cropping systems through the use of multiple crops and rotations using best management practices to optimize capture and utilization of precipitation for economic crop production, and (2) enhance adoption of alternative rainfed cropping systems that provide optimal profitability.

Procedures

The crop rotations are two-year (wheat-fallow), two three-year (wheat-grain sorghum-fallow and wheat-corn-fallow), and two four-year rotations (wheat-corn-sorghum-fallow and wheat-sorghum-corn-fallow), and continuous sorghum. All rotations are grown using no-till practices except for wheat fallow, which is grown using reduced-tillage. All phases of each rotation are present each year. Plot size is a minimum of 100 × 450 ft. In most instances, grain yields were determined by harvesting the center 60 feet (by entire length) of each plot with a commercial combine.

Results and Discussion

Wheat yields averaged across the past six years (2008–2014) tended to be slightly greater in two- and three-year rotations than in four-year rotations. Corn yields following wheat averaged about twice as much as when following sorghum. Similarly sorghum yields following wheat were about twice as much as when following corn or sorghum.

Grain yield response to crop rotation in large-scale dryland cropping systems study at Tribune: 2008-2014			
	Wheat	Corn	Sorghum
Crop rotation	Yield (bu/acre)		
Wheat-fallow	23	--	--

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Wheat-corn-fallow	23	36	--
Wheat-sorghum-fallow	25	--	65
Wheat-corn-sorghum-fallow	22	35	33
Wheat-sorghum-corn-fallow	23	18	62
Sorghum-sorghum	--	--	30
LSD 0.05	ns	5	8

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2. Diagnosing corn early-season growth problems

Getting a good stand of corn, with vigorous early-season growth, is the first step in getting good yields. When adverse conditions, such as a hard rain or unusually cool weather, occur after planting and emergence, producers should get out in their fields and take a close look at how their corn is doing.

If the plants emerged in good fashion, but the seedlings then have problems maintaining adequate growth and development or leaf color, there may be several possible reasons. A few of the most likely causes include:

Freeze damage. Much of the corn that was emerged at the time of the freeze on April 15th is beginning to recover with minimal damage. However, some of the new growth is having a hard time emerging from the dead tissue. New growth may become trapped and start to split from the side of the leaf sheath. Generally warmer temperatures will increase growth rates and new leaves will eventually split the dead tissue, emerge, and continue to grow normally.

Unusually cool temperatures, compacted soil, or waterlogging. Wet soils and unusually cool temperatures can inhibit root growth especially, slowing plant development. This can cause yellowed, wilting plants due to poor root growth, drowning, or a seedling blight infection. Seedling blight is often characterized by stem tissue near ground level that is discolored or water-soaked in appearance. Also, planting in wet soil can compact the seed furrow, inhibiting root growth. A shallow compaction layer can slow early root growth, resulting in stunted, nutrient deficient plants.



Figure 1. Sidewall and seed zone compaction in heavy clay soil. Photo by Stu Duncan, K-State Research and Extension.



Figure 2. Poor seedling emergence produces uneven stands. Photo by Ignacio A. Ciampitti, K-State Research and Extension.

Early-season lodging ("floppy corn syndrome"). This is usually associated with hot, dry weather during V1 to V6, which prevents adequate development and penetration of nodal roots. Plants can survive for a time on just the seminal root system, but they will have little mechanical support. Reasons for poor nodal root development and an elevated crown include sidewall compaction, erosion after emergence but before nodal root development, and sinking of the seedbed due to pounding rains. Often a good soaking rain is enough to allow nodal roots to establish and plants to recover. Inter-row cultivation can be used to push soil against plants with exposed crowns.



Figure 3. “Floppy corn” syndrome. Corn seedling lodging caused by dry weather and warm soil stunting crown root development. Photo by Doug Shoup, K-State Research and Extension.

White grubs or wireworms. These soil insects may be eating the roots, which will cause the plants to wilt.

Black cutworms. These insects, which can be found in the soil or on the surface, cause “window paning” of the leaves on young plants. Cutworms may also cut off seedling plants at the soil surface.

Flea beetles. These tiny leaf-chewing insects can cause “scratches” on leaves. Eventually, the leaves may shrivel, turn gray, and die. Plants are more susceptible to flea beetle injury when temperatures are cold and seedling growth is slow. Seedling plants are often able to recover from flea beetle injury because the growing point remains below ground level until the fifth leaf emerges.

Poor growth that occurs as circular to oval patches in the field could be an indicator of nematode problems. Approximately 35 days after emergence is an ideal time to sample for nematodes, particularly the root lesion nematode that inhabits about 80 percent of Kansas corn fields. Take 20 cores at a depth of 12 inches from directly in or alongside the row from the outer edges of affected areas. Additionally, 2 to 3 root balls of affected plants should be submitted at the same time. Bag the root samples separately from the soil cores. Samples can be submitted through local Extension offices or sent directly to the Plant Disease Diagnostic Lab in Throckmorton Hall.

Free ammonia from an anhydrous ammonia application. This can injure roots and kill germinating seed if the ammonia was applied too shallowly (especially in coarser soils), too close to the time of planting, or if dry soil conditions slowed the conversion of ammonia to ammonium. One way to minimize damage is to apply the ammonia at a 10 to 15 degree angle from the direction of planting. If injury occurs then it is more randomly distributed, reducing the multi-plant skips, and allowing the unaffected plants to compensate.

Ammonia injury can also occur when sidedressing anhydrous ammonia under dry soil conditions. Root injury can occur if the plants get too big or the knives run too close to the row. Ammonia injury resulting from poor soil sealing can cause leaves to appear watersoaked or have dead margins. Roots may appear sheared off, or burned off. Plants will normally recover from this injury, but yields can be reduced.

Putting a urea-based N fertilizer in contact with the seed. Urea will hydrolyze into ammonia and injure the seedling.



Figure 4. Seedlings damaged after starter fertilizer containing urea-N was placed in direct seed contact.

Photo by Dorivar Ruiz Diaz, K-State Research and Extension.

Nitrogen (N) deficiency. This does not usually occur until a later stage of growth in conventional tillage systems. But in no-till corn, especially in high residue situations, N deficiency is common where producers haven't applied nitrogen as a starter, or broadcast a significant amount of N prior to or at planting. In early planting in very cold soils where no N was applied close to the seed as a starter, seedlings may be N deficient in conventional-till also. Nitrogen deficient corn seedlings will be spindly, with pale yellow-green foliage. As the plants grow, the lower leaves will "fire," with yellowing starting from the tip of the leaf and progressing back toward the stalk.

Phosphorus deficiency. This can result in stunted growth and purple leaves early in the growing season. Phosphorus deficiency is often enhanced by cool, wet growing conditions.

Iron deficiency. This can cause upper leaves to be pale green between the veins. Iron deficiency is more common on high pH and calcareous soils.

Sulfur deficiency. This can result in stunted plants having pale green leaves, with no distinct pattern on the leaves.

Herbicide injury. This is not as common now as in the past, but can still occur. Corn is very susceptible to injury from carryover sulfonylurea herbicides which may have been applied to a previous crop, such as wheat. Carryover depends on soil pH, soil texture, application rates, rainfall, and other factors listed on the herbicide labels. Symptoms include stunting, chlorosis, and an overall sickly appearance. Corn will not grow out of this type of injury.



Figure 5. ALS herbicide carryover injury to corn. Photo by Stu Duncan, K-State Research and Extension.

For more details, see “Diagnosing Corn Production Problems in Kansas,” K-State publication S-54, at: <http://www.ksre.ksu.edu/bookstore/pubs/S54.pdf>

In addition, check the new eBook version of this publication at: <http://www.agronomy.k-state.edu/extension/crop-production/corn/>

Also, see “Corn Production Handbook,” K-State publication C-560, at: <http://www.ksre.ksu.edu/bookstore/pubs/C560.pdf>

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3. Considerations for corn planted under wet conditions

Recent rains have created very wet soil conditions in parts of Kansas. Some corn remains to be planted. What should producers expect if they plant corn into soils that are too wet, and what can they do to minimize any problems?

It is best, of course, to allow time for the soil to dry adequately before tillage or planting operations if at all possible. Wet conditions will make the soil more susceptible to compaction. Tilling some soils when they are too wet can produce large, persistent clods, complicate planting, reduce herbicide effectiveness, and destroy the seedbed. Also, compaction can occur in the seed furrow itself, restricting proper root development (also diminishing nutrient accessibility) and early plant growth.

If soils remain or become unusually wet after the corn has emerged, corn may look sickly for a while. Saturated soils inhibit root growth, leaf area expansion, and photosynthesis because of the lack of oxygen and cooler soil temperatures. Yellow leaves indicate a slowing of photosynthesis and plant growth. Leaves and sheaths may turn purple from accumulation of sugars if photosynthesis continues but growth is slowed.

Corn plants can recover with minimal impact on yield if the plants stay alive and conditions return to normal fairly quickly (early during the growth period). Although root growth can compensate to some extent later in the season, a saturated profile early in the season can confine the root system to the top several inches of soil, setting up problems later in the season if the root system is inadequate to extract needed water from lower in the profile.

If weather conditions persist for more than a week, corn emergence will be delayed and seedling will be more vulnerable to the presence of insects and diseases. Uneven corn stands likely will be greater when planting in cold and wet soils. This situation will be directly affecting the plant-to-plant uniformity, which could have an impact on the potential yield.



Figure 1. Uneven corn stand due to cold, wet weather in late April. Photo by Ignacio Ciampitti, K-State Research and Extension.

Saturated soils can also cause loss of nitrogen fertilizer by either denitrification (loss of nitrogen to the atmosphere) or leaching (movement of nitrogen beyond the rooting zone). For denitrification to occur, the soil doesn't need to be completely saturated. Denitrification can also occur at 85-90% of the pore space filled with water. Nitrogen in the nitrate (NO₃) form is needed for these losses to occur. Therefore a combination of fertilizer source, application time and the use of nitrification inhibitors can reduce leaching and denitrification.

Corn may respond to in-season nitrogen applications if a large portion of early-applied nitrogen is lost to these processes. Keep an eye out for nitrogen deficiency symptoms on fields that have been saturated for long periods. It may not be a bad idea to apply a strip or two of a high rate of nitrogen in those fields as soon as possible to serve as a fully-fertilized reference point.

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4. Buckbrush control in Kansas

Buckbrush (*Symphoricarpos orbiculatus*), also known as coralberry, is a native perennial shrub found in the eastern two-thirds of Kansas. The plant grows in open pastures and woodlands. It sends out “runners” and produces a red fruit in the fall. A related species, western snowberry (*Symphoricarpos occidentalis*), is found primarily in northcentral and northwest Kansas, and produces a white fruit.



Figure 1. White snowberry (left) and buckbrush (right) growing side-by-side in northcentral Kansas. Photo by W.H. Fick, K-State Research and Extension.

Buckbrush is generally considered an undesirable plant in areas being grazed by cattle. Some birds and small mammals use buckbrush patches for cover and nesting. Buckbrush can form dense patches or colonies that shade out more desirable species used for grazing.

Topgrowth removal of buckbrush after the plants have leafed out and the nonstructural carbohydrates stored in the roots are at a low level can be an effective control. One way to accomplish topgrowth removal is with prescribed burning. Fire can be an effective control technique if burning is done in the late spring. It may take 2 or 3 years of consecutive burning to reduce buckbrush stands. If you missed the opportunity to burn this year or are located in areas where burning wasn't possible, mowing is an option. Again, it may take 2 or 3 years of consecutive mowing at the proper time (generally early to mid-May) to reduce stands.

Herbicides can also be used to control buckbrush. The best time to spray occurs just as the leaves are starting to change from a light to dark green color. This timing corresponds with the low point in the

nonstructural carbohydrate cycle. A number of herbicides can be used to spray buckbrush, but 2,4-D low-volatile ester formulations at 1.5 to 2 lbs/acre are usually quite effective.

If you are simultaneously trying to control other species, such as musk thistle, consider Chaparral (aminopyralid + metsulfuron) or Grazon P+D (picloram + 2,4-D). Chaparral can be used alone at 2 to 3 oz/acre for buckbrush control, but I prefer adding 2 pint/acre of 2,4-D to 2 oz/acre Chaparral. Grazon P+D applied at 2-3 pints/acre will provide acceptable control of both buckbrush and musk thistle. Caution should be used if treating cool-season grasses with Chaparral. Grazon P+D is a restricted use pesticide. Always read the label when considering the use of herbicides.

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5. South Central Experiment Field Spring Field Day, May 19

The Spring Field Day at the South Central Experiment Field will be held May 19, starting at 5 p.m. The event will be held at the field headquarters, 10620 S. Dean Road.

The main topics will include:

- Review of canola research – Mike Stamm, K-State Canola Breeder
- Wheat breeding research, variety plots – Allan Fritz, K-State Wheat Breeder, Manhattan
- Simulated grazing and N fertility management with sensors – Tyler Gardner, Graduate Student
- Kansas Wheat Alliance update – Daryl Strouts, Kansas Wheat Alliance

Also, representatives of the Hutchinson Chamber of Commerce Ag Committee will discuss their activities in the community. More information about the field day is available by calling Gary Cramer, agronomist-in-charge, at 620-662-9021, or email at gcramer@ksu.edu. A meal will follow the field day.

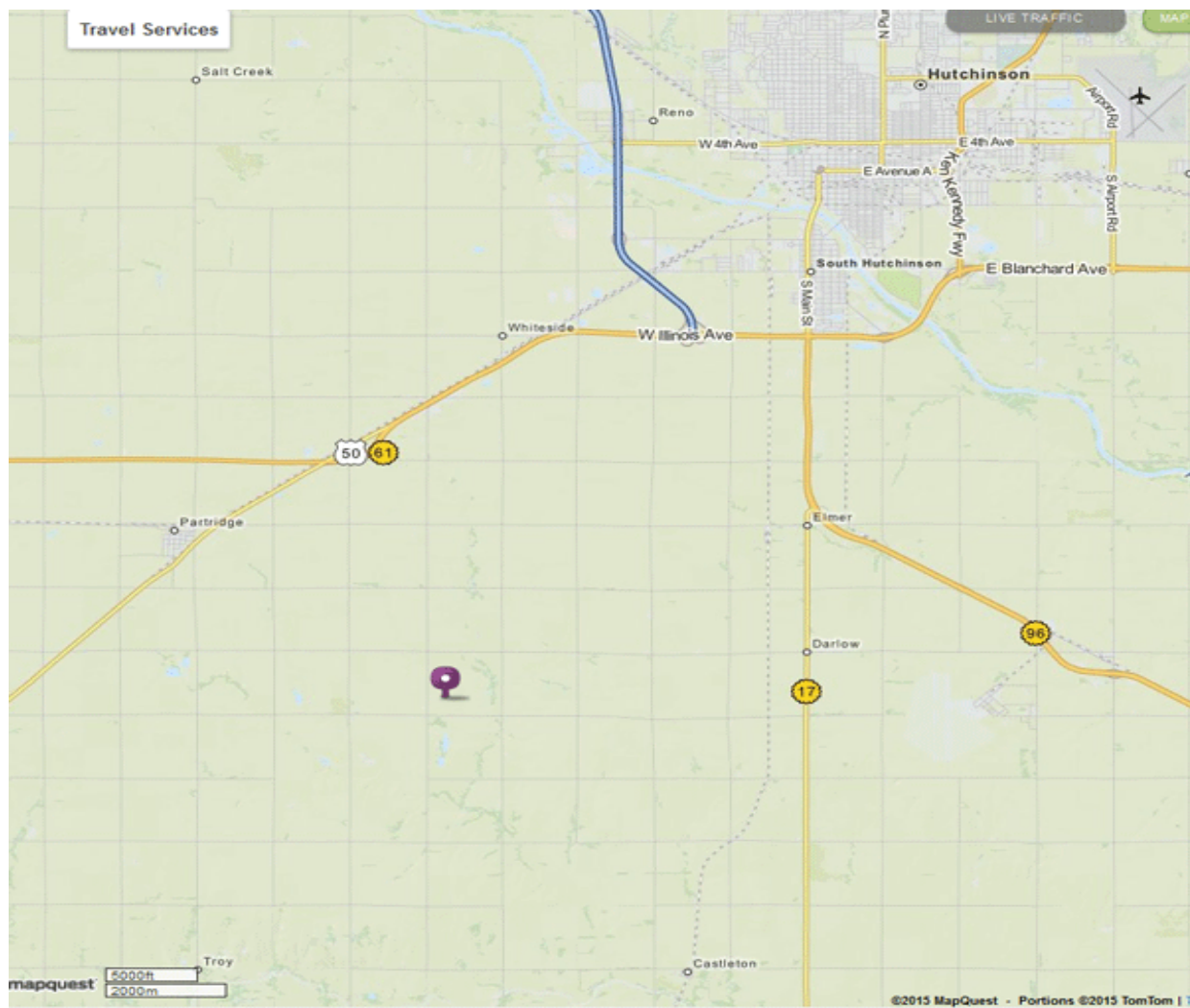


Figure 1. Map to South Central Experiment Field.

6. Canola clinics and field tour set for May 19, 21

A series of canola educational activities is set for May. First up are two harvest clinics in south central Kansas. Canola harvest is fast approaching, and producers will get the latest information and recommendations on harvesting their crop. The clinics are offered in collaboration with the Great Plains Canola Association and Oklahoma State University.

Canola is a crop that needs special attention during ripening, so we want to make sure producers have the tools necessary to make informed management decisions to prepare for harvest.

Topics for the harvest clinics include staging of the crop and harvest preparation, a harvesting methods overview, and a harvest equipment set-up discussion and demonstration. Speakers at the clinics will be canola extension specialists from the Great Plains Canola Association and Oklahoma State University. The two clinics are:

May 19 – Canola harvest clinic

- 2-4 p.m.
- South Central Kansas Experiment Field, Redd Foundation Field. From Partridge, 1 ½ miles west and ½ mile south on S. High Point Rd.
- Contact Gary Cramer (620-662-9021) for more information.

May 21 – Canola harvest clinic

- 9-11 a.m.
- Harper County Fairgrounds, Harper
- Contact Jenni Carr (316-323-7330) for more information.

A field tour on May 21 will be held for producers to learn more about basic agronomics and what canola producers in south central Kansas are doing to incorporate winter canola into their cropping systems. This tour is sponsored by K-State Research and Extension and Rubisco Seeds.

Canola has had a tough year in central Kansas, mostly due to the major cold snap we experienced in mid-November and fluctuating temperatures over the winter. For this reason, we would like to showcase some of the fields that pulled through and talk about ways to make canola more consistent in the state.

This field tour includes two stops:

May 21 – Canola agronomics field tours

- 1st stop: 8:30-10:30 a.m.
- The tour will start at the David Seck farm, 5605 S. Kent Rd., Hutchinson. Drive 2 ¾ miles south of US Hwy. 50 on Kent Rd. east of Hutchinson.
- See a hybrid winter canola field planted with a 20-inch row planter. Learn how winter canola fits into a cropping system that includes irrigated corn, soybeans, and wheat.
- 2nd stop: 11 a.m.-noon.
- The field is at the Larry Reichenberger farm 5 miles north of Garden Plain on N 295th Street W.

- View the K-State--AGCO canola row spacing (20-inch versus 30-inch) by seeding rate study. Learn how managing seeding rate can benefit both winter survival and yield.

For more information on any of these events, contact Mike Stamm, K-State Research and Extension Canola Breeder, at 785-532-3871 or mjstamm@ksu.edu.

7. Southeast Agricultural Research Center Spring Crops Field Day planned May 27

Wheat, weather and cropping systems will take center stage at the Southeast Agricultural Research Center's Spring Crops Field Day on Wednesday, May 27 in Parsons.

The event will be held just south of U.S. Highway 400 on Ness Road (North 32nd St.). It starts with registration and a complimentary breakfast from 7:30 to 8:30 a.m.

Doug Shoup, Southeast Area Crops and Soil Specialist and Lonnie Mengarelli, Agricultural Technician along with seed company representatives, will lead a tour of 30 wheat variety plots.

Chip Redmond, Weather Data Library manager, will present "Weather Tools for Agriculture and Future Weather Outlook."

Ignacio Ciampitti, K-State Research and Extension crop production specialist will present "Fine-tuning Cropping Systems via Integration of New Technologies."

In case of rain, the field day will be held indoors.

More information is available by calling 620-421-4826.

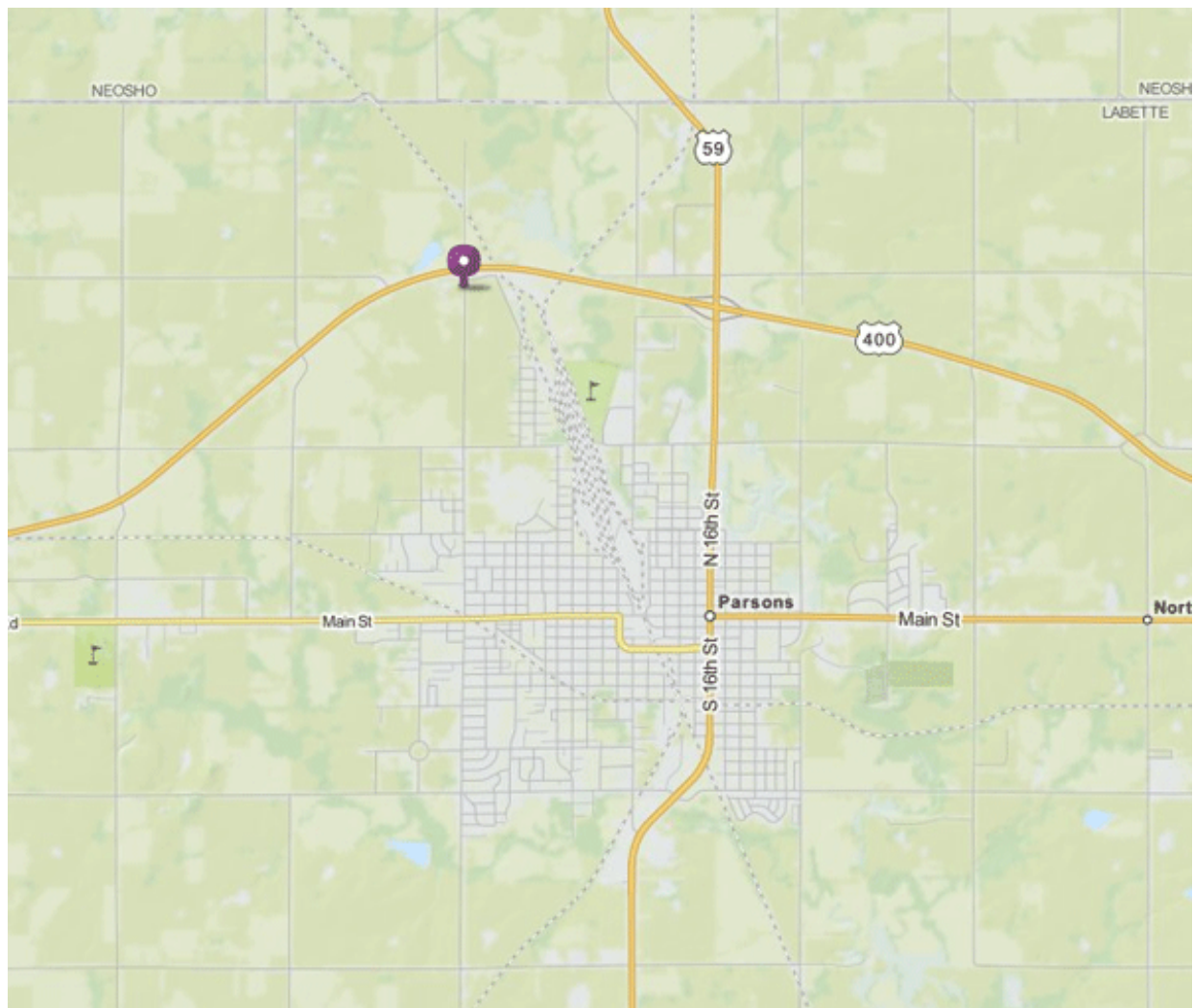
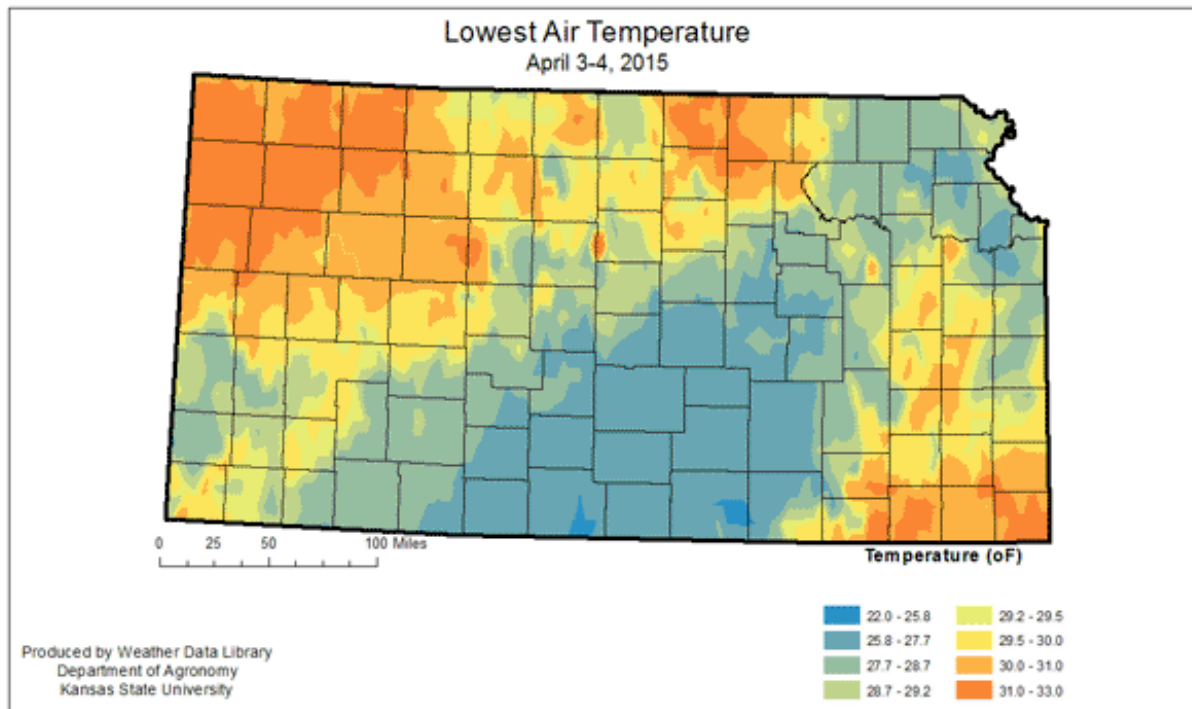


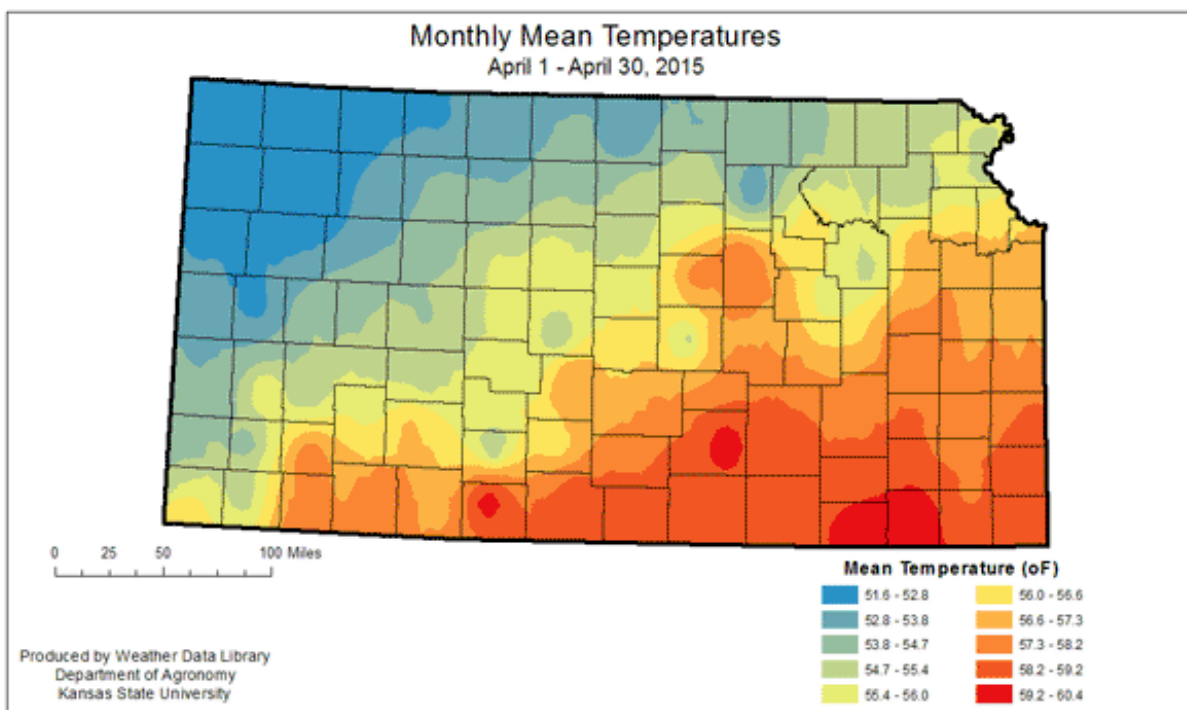
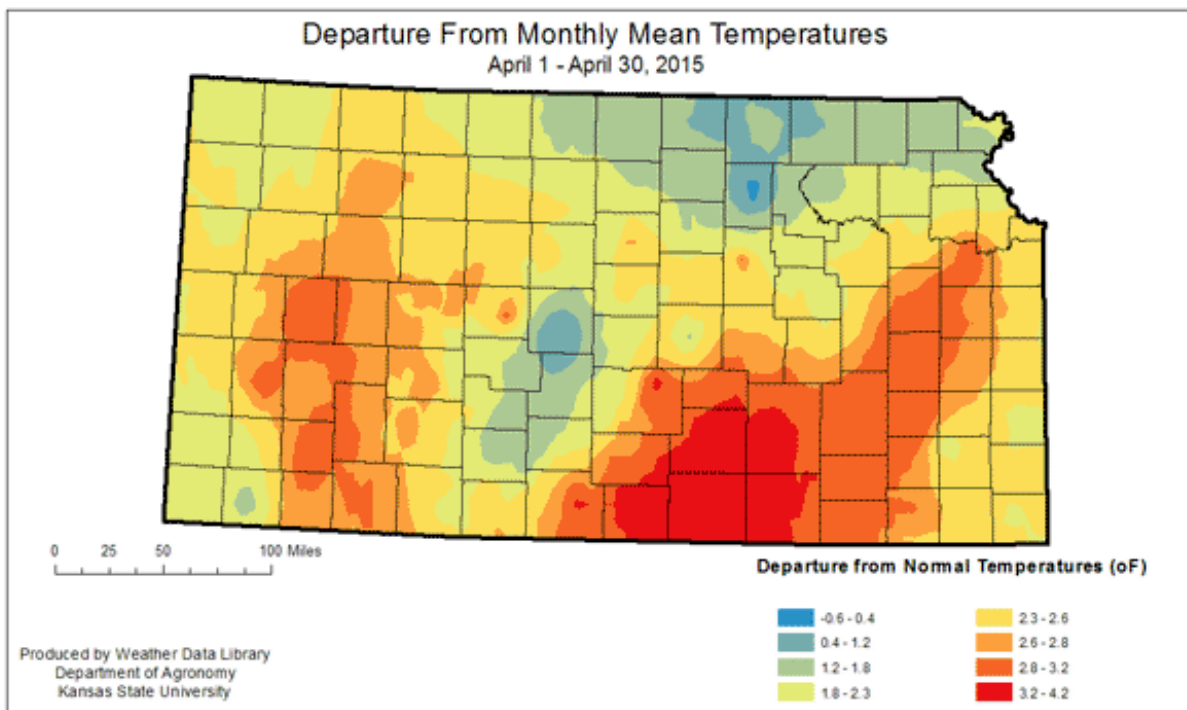
Figure 1. Map to Southeast Agricultural Research Center, Parsons.

8. April 2015 weather summary for Kansas: April 4 freeze

April temperatures ranged from 20 degrees F on April 5th at Wilmore in Comanche County to 96 degrees F at Great Bend on the 7th. The widespread low temperatures on the 4th and 5th of April had a negative impact on winter wheat. The largest area of the coldest temperatures coincided with wheat that was at the most vulnerable stages.

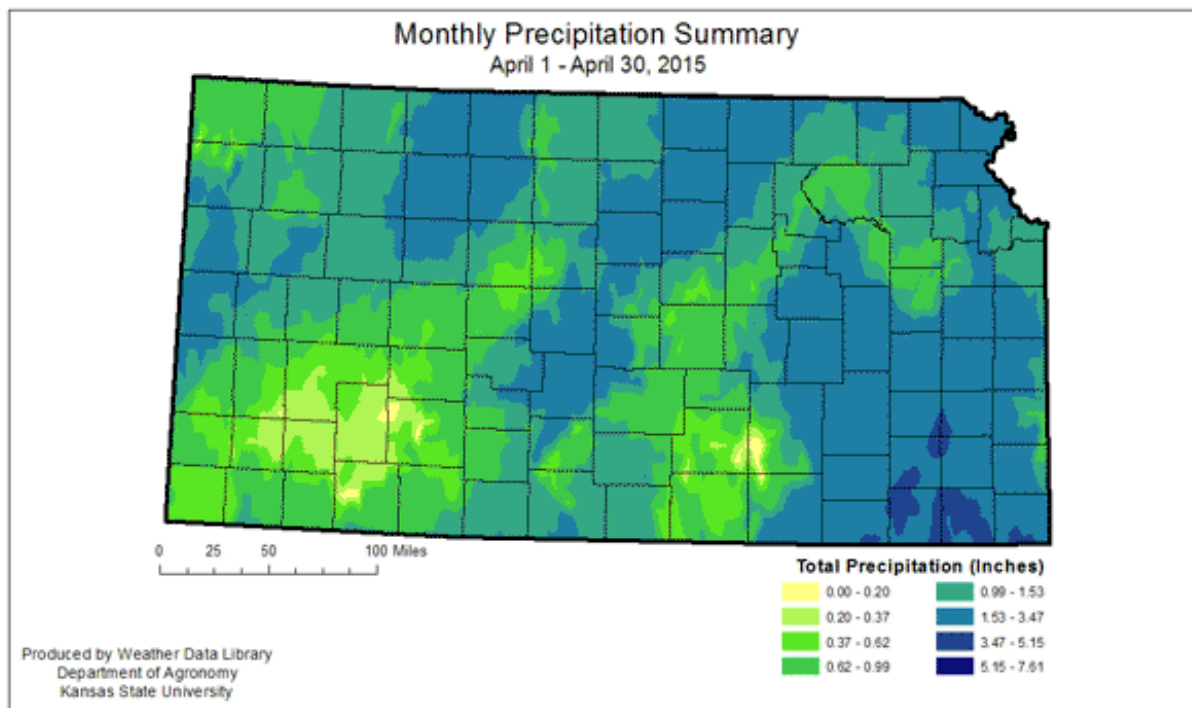
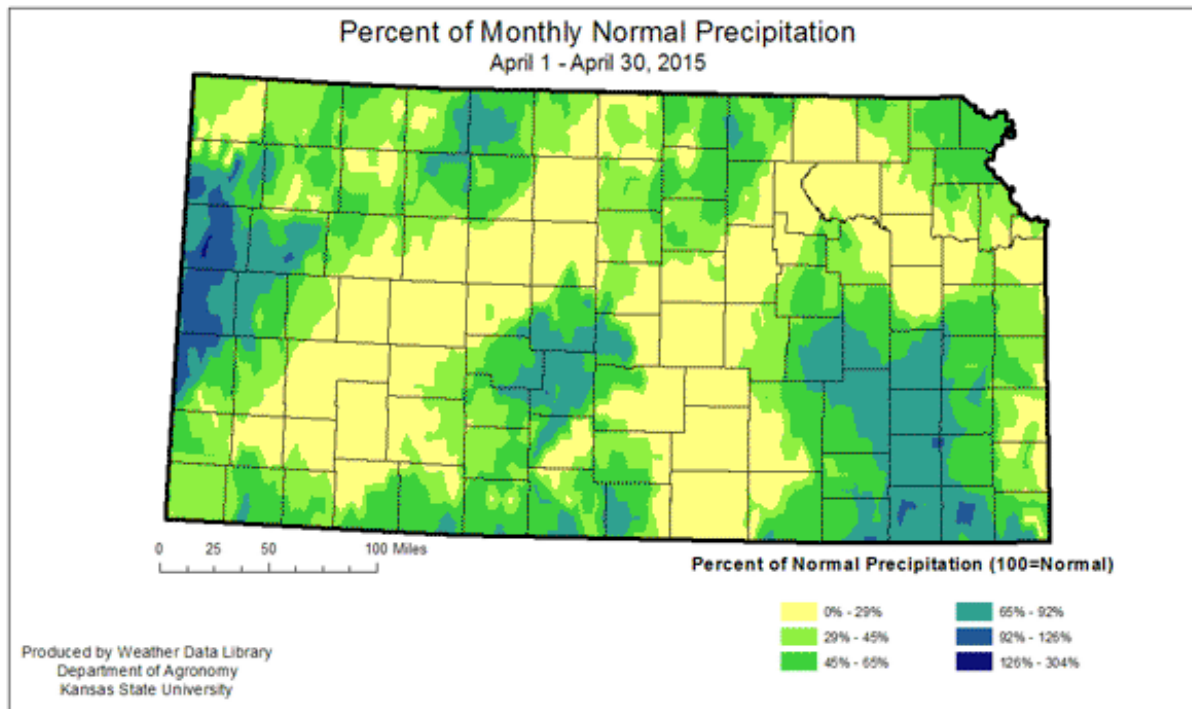


Overall, the temperatures averaged 55.7 degrees F in April, which was 2.4 degrees warmer than normal. It ranks as 34th warmest since 1895 or in the warmest third of the period of record. The warmest departures from average were in the South Central Division, while the coolest conditions prevailed in the Northeastern Division.

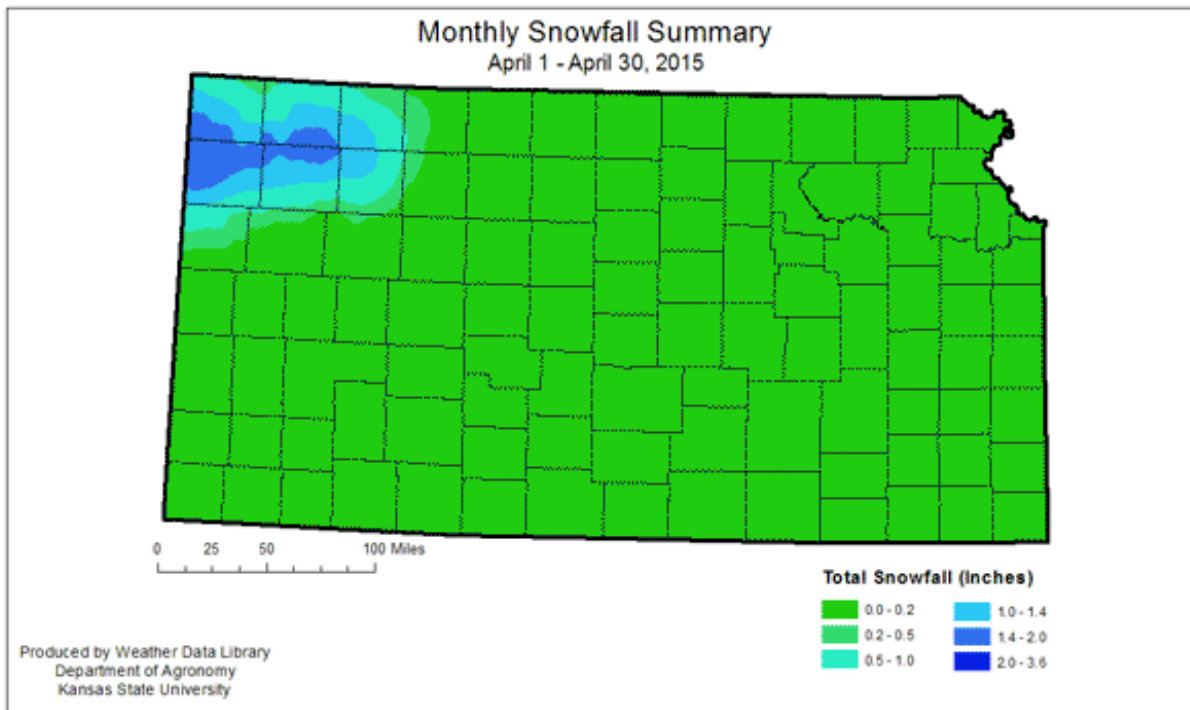


Statewide average precipitation was 2.55 inches which was 95 percent of normal. The Southwest Division had the lowest percent of normal at 60 percent or 1.06 inches. This left a deficit of -0.62 inches. Within the division amounts were highly variable. Ashland (Clark County) reported 3.34 inches while the Garden City Experiment Station reported just 0.25 inches. The highest 24-hour total reported for the month at a National Weather Service Coop site was 3.95 inches at Sharon Springs on the 17th. The highest monthly total for the National Weather Service was 7.61 inches at Hudson,

Stafford County. The greatest monthly total for the CoCoRaHS network 7.36 inches at Buffalo 0.1 NW, Wilson County.



Snowfall was concentrated at the beginning of the month, with the highest totals reported in the Northwestern Division. The greatest monthly totals were 2.7 inches at Goodland (CoCoRaHS) and 3.6 inches at Colby (NWS).



The severe weather season was more active in April than in March. There were 29 tornadoes reported in April. Damaging wind reports totaled 71, while hail reports numbered 128. One of the most active days of the month occurred on the 24th, when multiple tornadoes, with high winds and hail occurred.

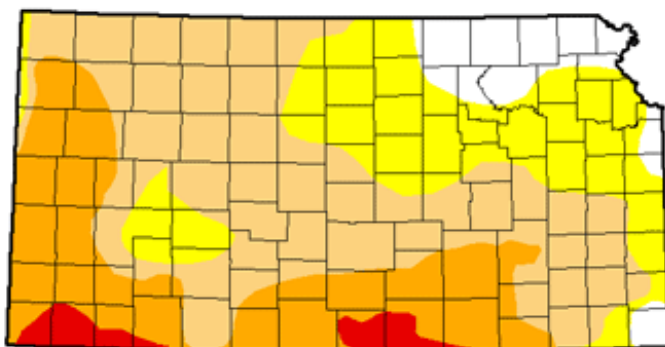
Drought conditions persist across the state, particularly in the west. There was widespread degradation in the western portions of the state, but the drought-free portion of the state expanded in the Northeast and slightly in the Southeast. While an El Niño/Southern Oscillation (ENSO) continues, it is weak and the impacts are uncertain. The May temperature outlook calls for greater chances of normal temperatures for most of the state. The precipitation outlook is for wetter-than-normal conditions statewide. If the outlook materializes, drought conditions are likely to improve over parts of the state during May.

U.S. Drought Monitor Kansas

April 28, 2015

(Released Thursday, Apr. 30, 2015)

Valid 7 a.m. EST



Author:
Anthony Artusa
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	8.01	24.11	41.71	23.01	3.17	0.00
Last Week 4/21/2015	8.01	24.11	40.33	23.52	4.04	0.00
3 Months Ago 1/27/2015	0.46	61.89	19.08	16.71	1.88	0.00
Start of Calendar Year 12/01/2014	19.49	43.02	19.18	16.05	2.25	0.00
Start of Water Year 9/01/2014	18.51	35.36	26.63	17.13	2.37	0.00
One Year Ago 4/29/2014	0.00	1.16	26.78	47.39	24.68	0.00

Intensity:

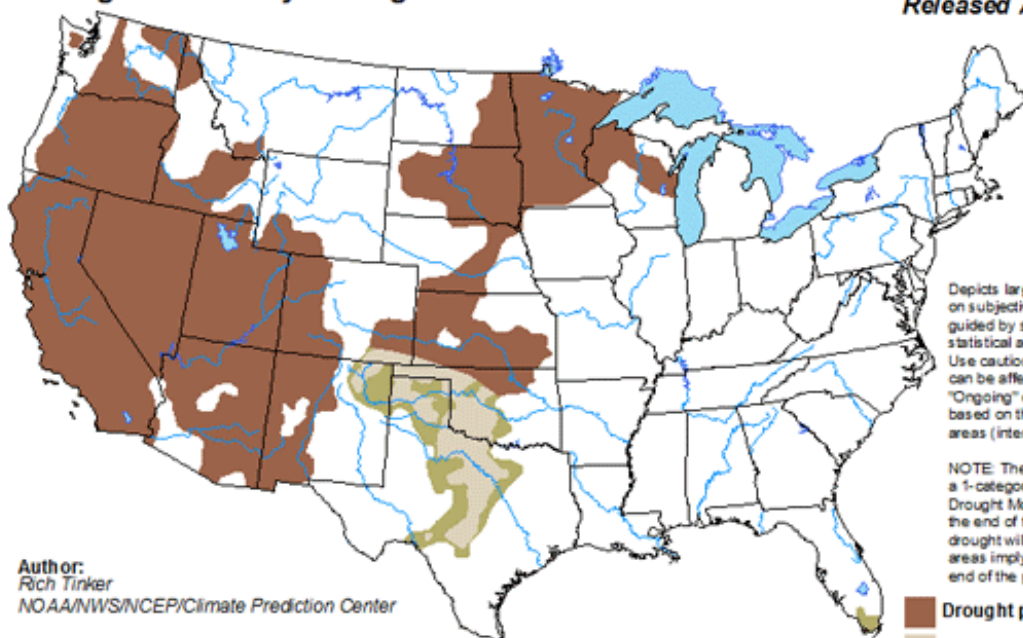
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

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

U.S. Monthly Drought Outlook Drought Tendency During the Valid Period

Valid for May 2015

Released April 30, 2015



Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center

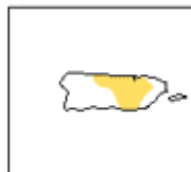
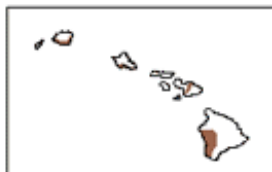
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists/intensifies
- Drought remains but improves
- Drought removal likely
- Drought development likely



<http://go.usa.gov/h6jh>



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Apr 2015

Kansas Climate Division Summary

Precipitation (inches)							Temperature (°F)			
April 2015				2015 Jan through Apr			Monthly Extremes			
Division	Total	Dep. ¹	% Normal	Total	Dep. ¹	% Normal	Ave	Dep. ¹	Max	Min
Northwest	2.06	-0.01	100	2.63	-1.74	61	52.2	1.6	88	26
West Central	1.93	0.02	103	2.81	-1.60	64	53.4	1.5	91	22
Southwest	1.02	-0.62	59	2.83	-1.19	70	56.0	2.2	92	22
North Central	2.54	0.02	97	3.87	-2.12	62	54.4	1.6	91	28
Central	2.34	-0.32	87	3.83	-2.78	57	56.2	2.1	92	25
South Central	3.57	0.87	134	5.21	-2.11	72	58.0	2.5	92	20
Northeast	2.53	-0.72	80	4.73	-2.73	63	55.6	2.1	87	24
East Central	2.85	-0.71	79	5.00	-3.48	58	56.7	1.9	88	25
Southeast	3.98	0.11	103	6.02	-3.85	60	58.5	1.9	90	22
STATE	2.55	-0.12	93	4.13	-2.38	63	55.7	1.9	92	20

1. Departure from 1981-2010 normal value

2. State Highest temperature: 96 oF, Great Bend (Barton County) on the 7th.

3. State Lowest temperature: 20 oF at Wilmore 16SE (Comanche County) on the 5th.

4. Greatest 24hr rainfall: 3.95 inches at Sharon Spring, Wallace County, on the 17th (NWS); 4.64 inches at Caldwell 8.4 N, Sumner County, on the 19th (CoCoRaHS).

Source: KSU Weather Data Library

Mary Knapp, Weather Data Library
mknapp@ksu.edu

9. Comparative Vegetation Condition Report: April 21 - May 4

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=CRP3Y5Nlggw>

<http://www.youtube.com/watch?v=tUdOK94efxc>

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

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

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

Kansas Vegetation Condition

Period 18: 04/21/2015 - 05/04/2015

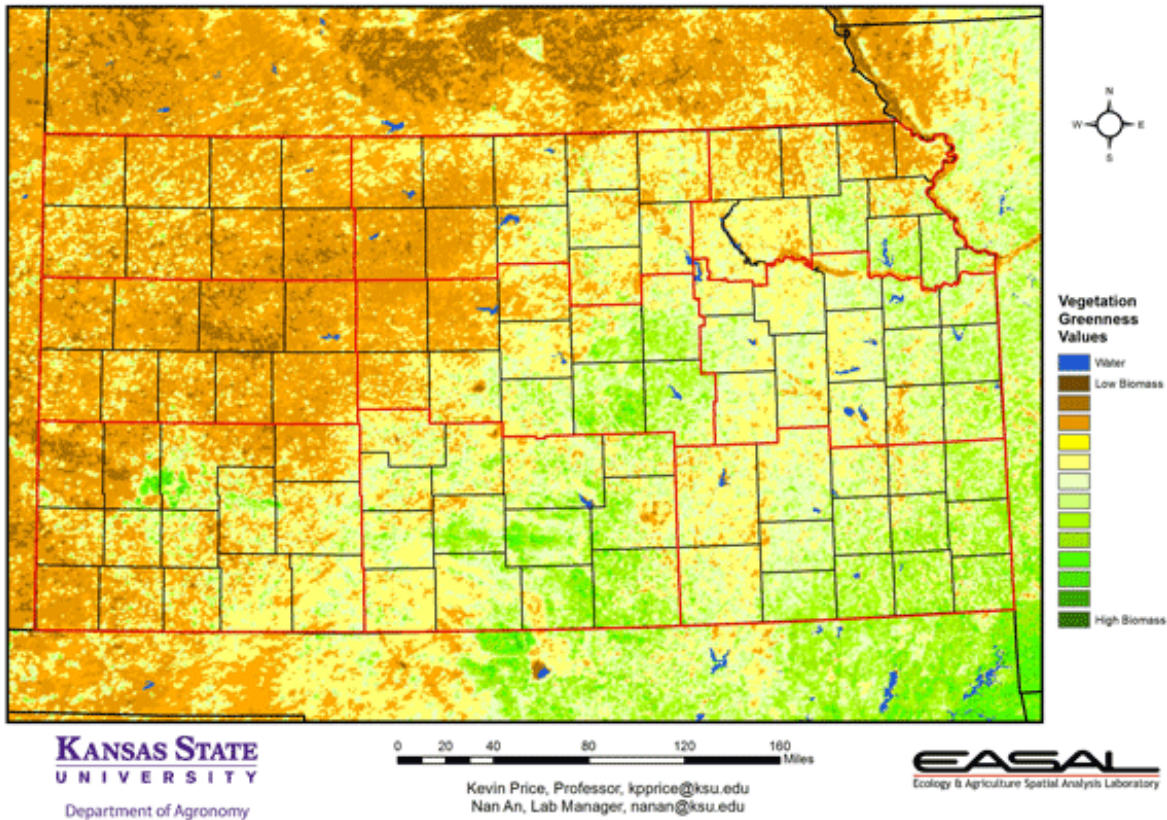


Figure 1. The Vegetation Condition Report for Kansas for April 21 – May 4 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that photosynthetic activity is greatest in southeast Kansas, where temperatures and moisture have been most favorable. Pockets of increased vegetative activity are beginning to be visible in the eastern portions of central Kansas, where significant moisture was received over the period. Activity in northwest and west central Kansas continues to be limited.

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Kansas Vegetation Condition Comparison
Late-Apr/Early-May 2015 compared to the Late-Apr/Early-May 2014

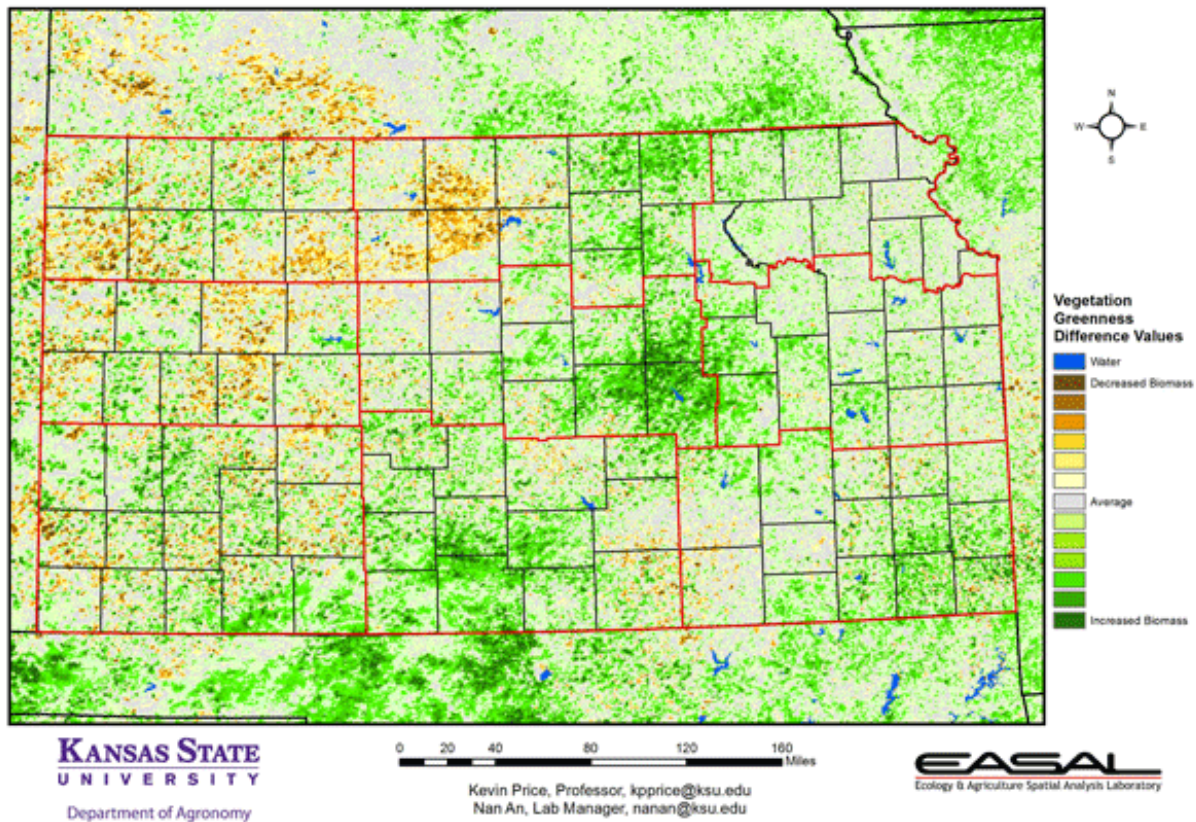


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for April 21 – May 4 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows largest areas of much lower biomass production in Smith and Osborne counties. The continued rainfall deficit in these areas has hindered plant development.

Kansas Vegetation Condition Comparison

Late-Apr/Early-May 2015 compared to the 26-Year Average for Late-Apr/Early-May

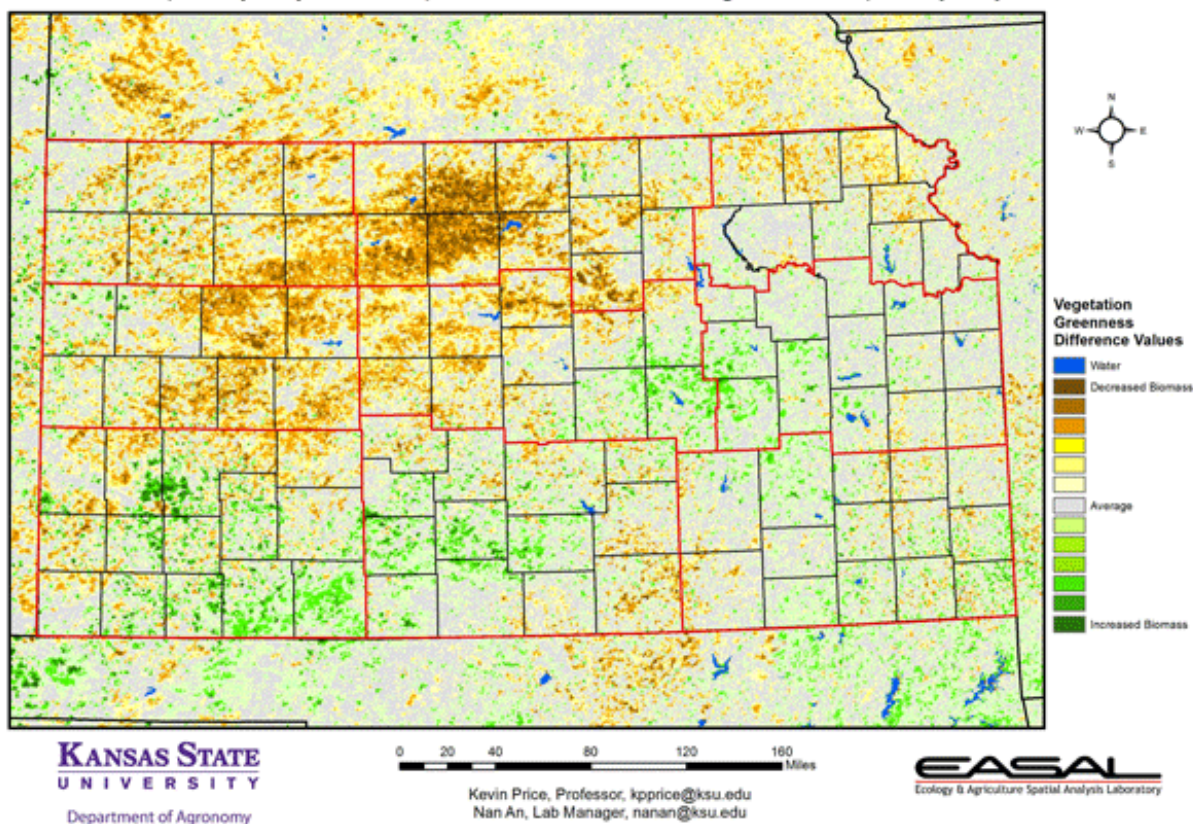


Figure 3. Compared to the 26-year average at this time for Kansas, this year's Vegetation Condition Report for April 21 – May 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that a large portion of Kansas from the Northwest Division through the Central Division has below-average biomass production. Smith and Osborne counties show particularly low biomass production. For much of these areas, this reduction in biomass production is a combination of winterkill, freeze damage, and drought. Only portions of the Southwest and western South Central Divisions have higher-than-average photosynthetic activity.

U.S. Corn Belt Vegetation Condition

Period 18: 04/21/2015 - 05/04/2015

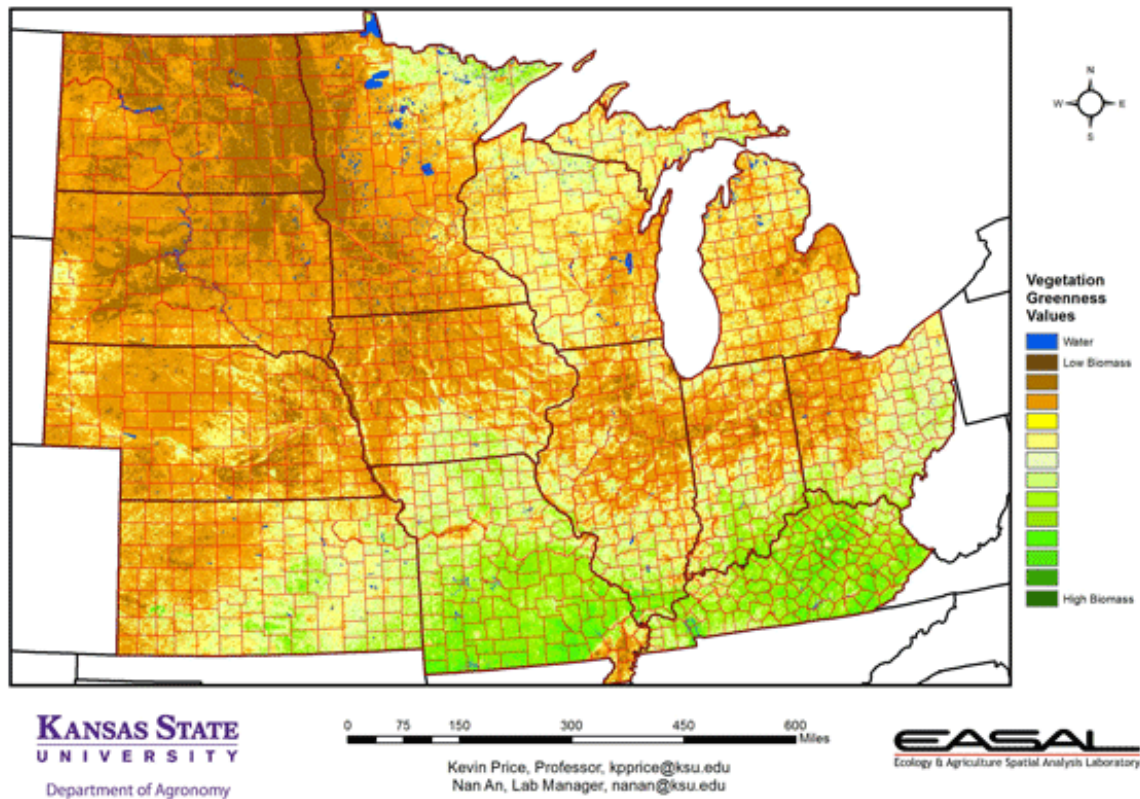


Figure 4. The Vegetation Condition Report for the Corn Belt for April 21 – May 4 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the greatest photosynthetic activity is concentrated in the south central portion of the region, extending north to the Ohio River in the east. Some increased photosynthetic activity is also visible in northeastern Minnesota and northern Wisconsin. This increase is mainly due to the quick loss of snow cover in the area. Much lower NDVI values are visible in eastern North Dakota, where drought conditions are deepening. Impacts from rainfall this week have yet to be seen.

U.S. Corn Belt Vegetation Condition Comparison
Late-Apr/Early-May1 2015 Compared to Late-Apr/Early-May 2014

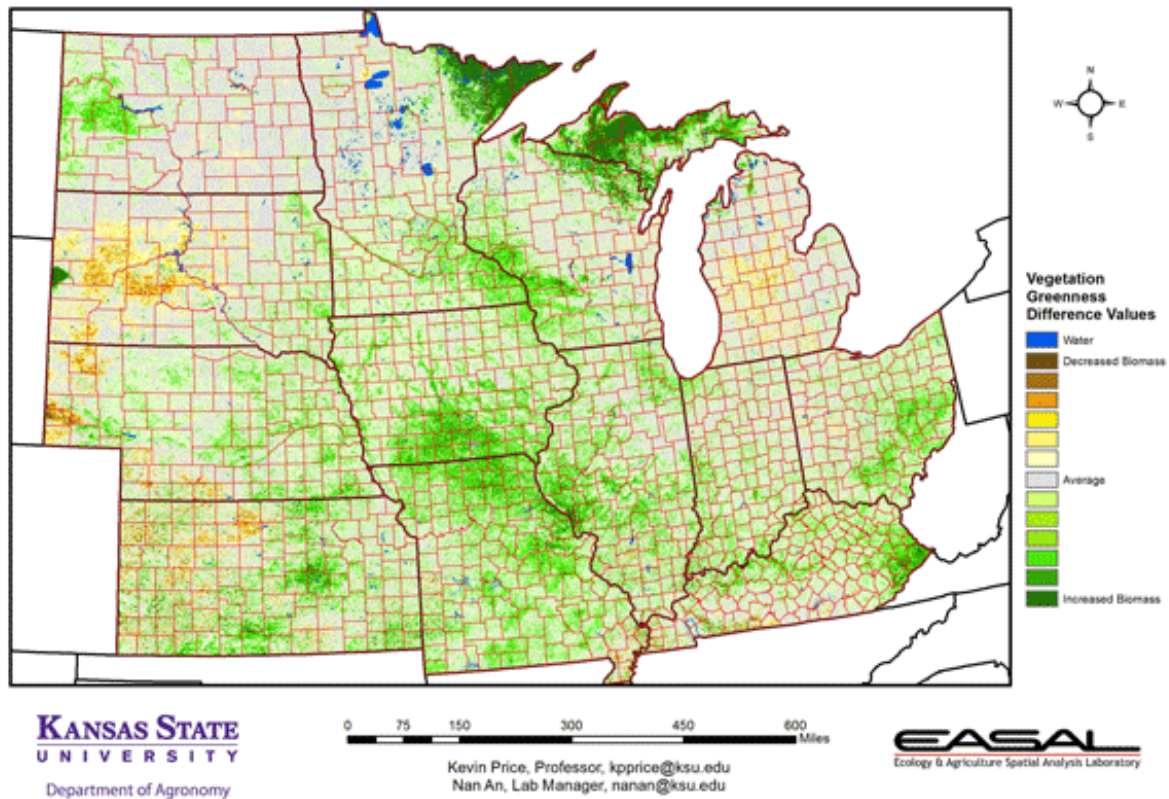


Figure 5. The comparison to last year in the Corn Belt for the period April 21 – May 4 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows a pocket of much higher NDVI values in the Black Hills of South Dakota and the Upper Great Lakes region of eastern Minnesota, northern Wisconsin, and the western Upper Peninsula of Michigan. These areas saw much lower snowfall totals this season, and thus have higher photosynthetic values this spring compared to last. In southern Iowa, northern and eastern Missouri, and through the Ohio River Valley, mild and wet spring conditions have favored photosynthetic activity.

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

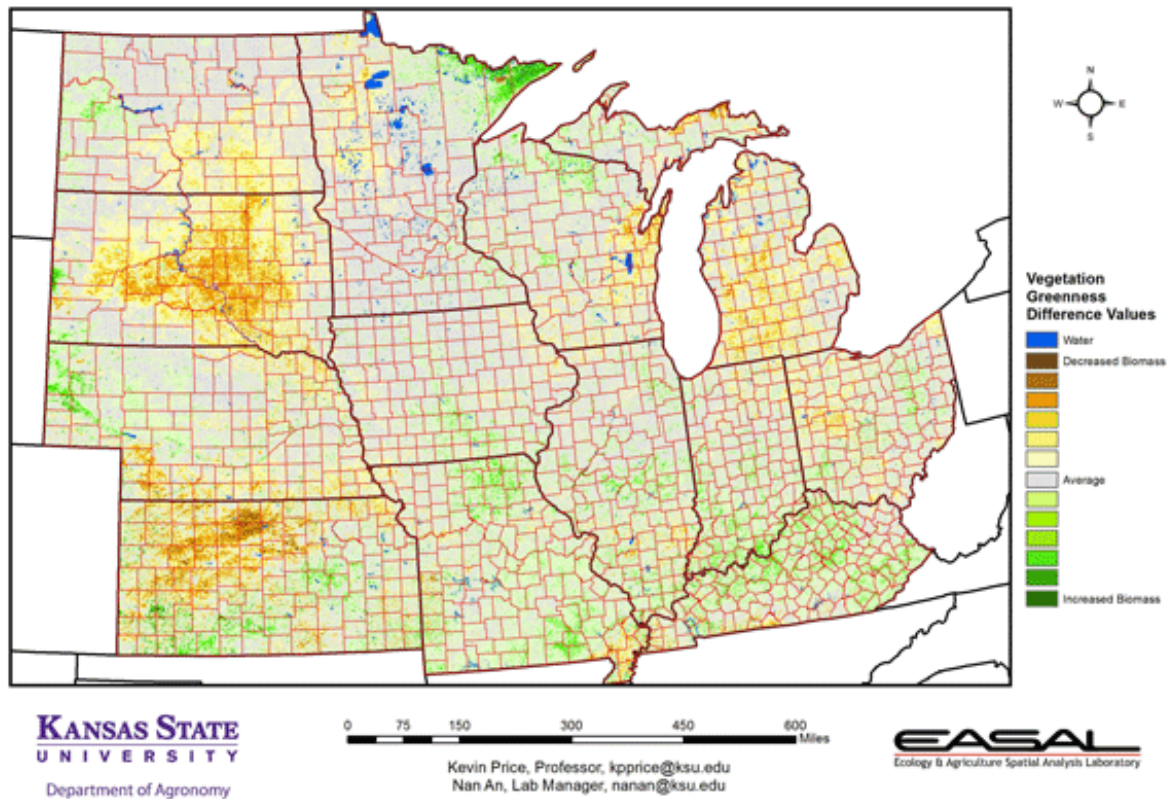


Figure 6. Compared to the 26-year average at this time for the Corn Belt, this year's Vegetation Condition Report for April 21 – May 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows an area of below-average photosynthetic activity in northern and central Kansas, and central South Dakota. Below-average precipitation continued to be a problem in these areas through this two-week composite period.

Continental U.S. Vegetation Condition

Period 18: 04/21/2015 - 05/04/2015

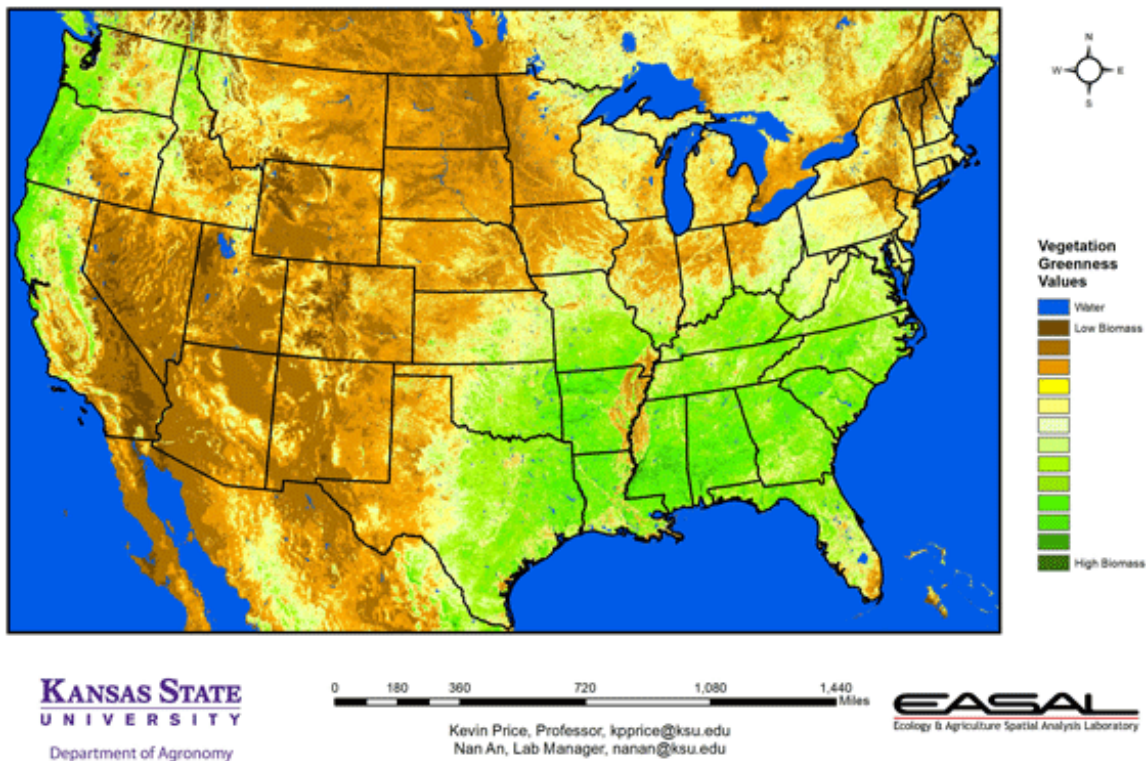


Figure 7. The Vegetation Condition Report for the U.S. for April 21 – May 4 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that an area of low photosynthetic activity continues along the central Mississippi River Valley, where flood conditions are finally falling. In the West, moderate biomass production continues along the coast from central California to Washington. Photosynthetic activity remains limited from the Northern Plains to the Panhandle of Texas and westward toward the Rockies, as the impact of recent rains is not yet visible.

Continental U.S. Vegetation Condition Comparison Late-Apr/Early-May 2015 Compared to Late-Apr/Early-May 2014

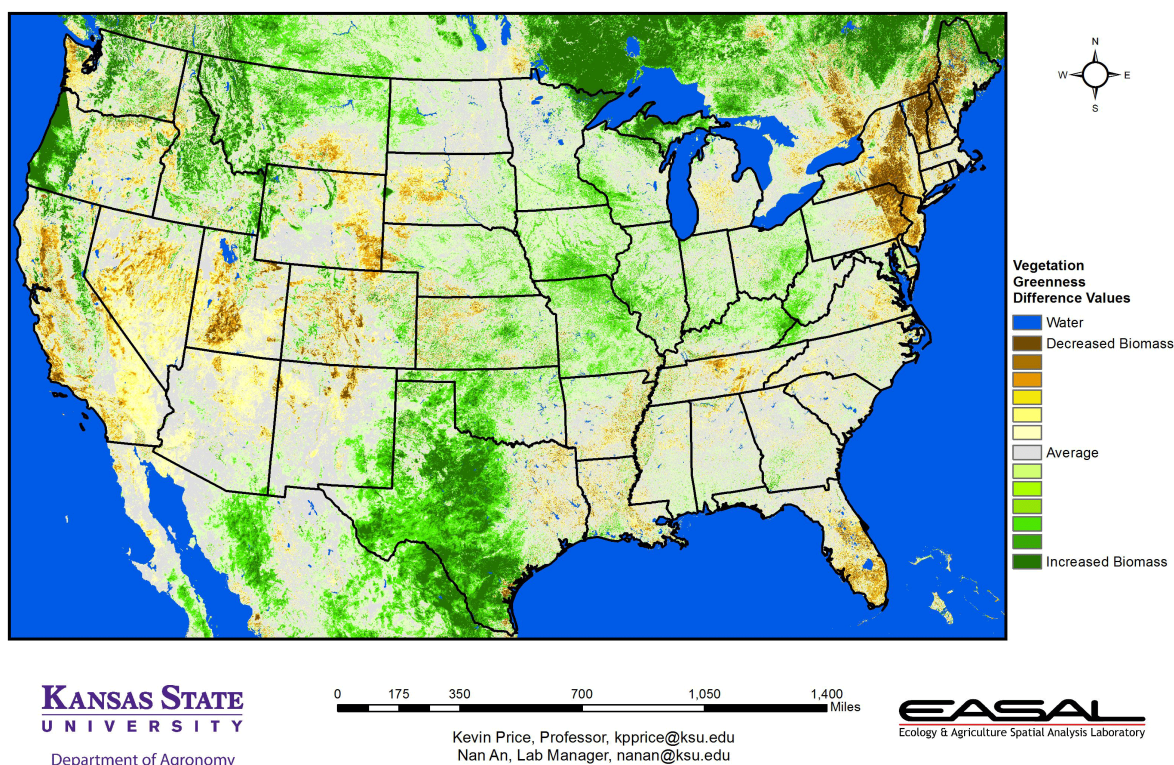


Figure 8. The U.S. comparison to last year at this time for the period April 21 – May 4 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows increased photosynthetic activity in the Pacific Northwest, the Northern Great Lakes, and west Texas. For the northern areas, this increase is due mainly to lower snow amounts. In Texas, this increase is due to recent moisture. That moisture has favored rapid green-up. In all cases, the question is how quickly the available moisture will be depleted. Chances for continued favorable moisture are better in the Southern Plains than in the Northern Plains, or in the Pacific Northwest. Lower NDVI values are becoming visible along the coast of Washington. Lower NDVI values are also present in the New England area, as cool conditions have delayed spring development.

Continental U.S. Vegetation Condition Comparison
Late-Apr/Early-May 2015 Compared to 26-year Average for Late-Apr/Early-May

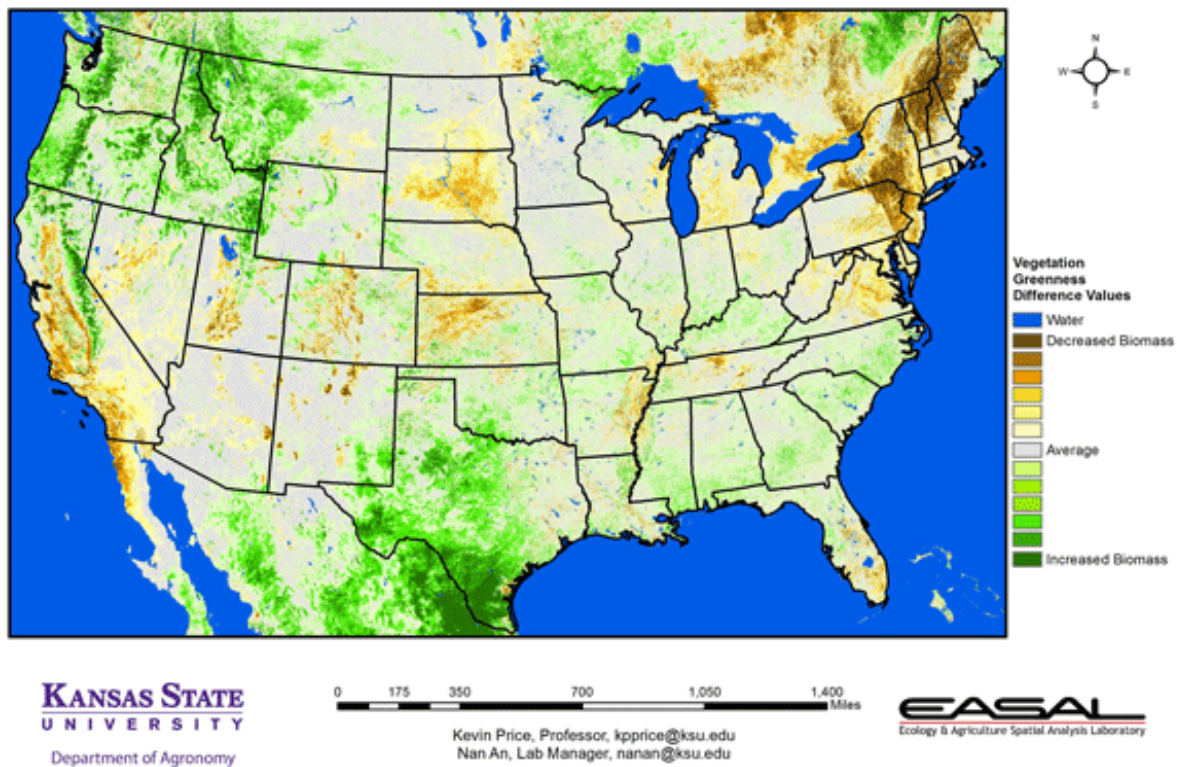


Figure 9. The U.S. comparison to the 26-year average for the period April 21 – May 4 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows pockets of below-normal photosynthetic activity in the Central Plains and the Central Valley of California, due mainly to drought. The small band of below-normal photosynthetic activity in northern Colorado and southern Wyoming is more the result of recent snow events, while the low biomass production in New England is mainly the product of slow spring growth.

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