k-state extension AGRONOMY e-Updates

Number 339
March 2, 2012

1. Effects of early greenup in wheat

The good topsoil moisture levels (except in far southwest Kansas) and unusually warm temperatures in late February and early March have caused wheat in much of Kansas to break dormancy and start greening up. This is a scenario reminiscent of 2007, which was a year with severe spring freeze injury. Hopefully we will avoid that this year.

The wheat has begun to grow as a result of several days with temperatures in the 60s and nighttime temperatures above freezing. It would be much better if temperatures were colder.

Plants growing at this time of year use valuable soil moisture. Even though topsoil moisture is adequate in most of Kansas, the moisture would be better used later in the growing season.

In addition, plants will have lost some of their winterhardiness. This won't be a problem if the weather never turns extremely cold again this month or if temperatures cool down gradually, so the plants can regain some of their winterhardiness. If the wheat is green and growing, however, and temperatures suddenly go from unusually warm to extremely cold, freeze injury could occur.

The warm weather could also result in early-season insect and disease problems. Army cutworms are sometimes a problem in wheat fields during March. Other early-spring insects to watch include winter grain mites and greenbugs. Early-season disease concerns include powdery mildew and tan spot.

Producers should watch their wheat crops for insects and diseases, and make every effort to get on their topdress nitrogen before the crop reaches the first hollow stem. Other than that, there's not much that producers can do to stop the development of the crop. Grazing the wheat can hold back its development, but grazing may not be possible much longer this winter. Cattle should be pulled off before first hollow stem, and this will be occurring soon in southern Kansas, if it hasn't already occurred. The longer temperatures remain above normal, the more susceptible the wheat will be to a sudden temperature drop to the single digits or below.

-- Jim Shroyer, Extension Agronomy State Leader
jshroyer@ksu.edu

2. Warm temperatures can affect spring wheat herbicide application decisions

The warm temperatures recently have caused wheat to start greening up in most areas of the state. If this continues, wheat will likely reach its various growth stages earlier than usual. As a result, producers should be extra sure to pay close attention to the growth stage of their wheat before making their herbicide applications.

Dicamba can be applied to wheat between the 2-leaf and jointing stages of wheat. Application of dicamba after wheat reaches the jointing stage of growth causes severe prostrate growth of wheat and significant risk of yield loss. Dicamba is effective for control of kochia, Russian thistle, and wild buckwheat, but is not good for control of mustard species. Kochia, Russian thistle, and wild buckwheat are summer annual weeds that may emerge before or after wheat starts to joint, so timing of dicamba for control of these weeds can sometimes be difficult. Fortunately, dicamba provides some residual control of these weeds following application.

Other herbicides that must be applied prior to jointing include Agility SG, Beyond (on Clearfield varieties only), Olympus, Olympus Flex, Orion, PowerFlex, Pulsar, Rage D-Tech, and Rave.

MCPA and 2,4-D have different application guidelines. In general, MCPA is safer on wheat than 2,4-D, especially when applied prior to tillering. We recommend that 2,4-D not be applied to wheat until it is well-tillered in the spring. Application of 2,4-D prior to tillering hinders the tillering process, causes general stunting and can result in significant yield loss.

Stunting from an application of 2,4-D to wheat prior to tillering. Photo by Dallas Peterson, K-State Research and Extension.

2,4-D is labeled for application to wheat from the full-tiller stage until prior to the boot stage of growth, but is probably safest between full-tiller and jointing stages of growth. Wheat will sometimes exhibit prostrate growth from 2,4-D applications applied in the jointing stage of growth, but yields generally are not significantly affected if applied before the boot stage of growth.

MCPA is relatively safe on young wheat and can be applied after the wheat is in the three-leaf stage (may vary by product label) until it reaches the boot stage of growth. Consequently, MCPA would be preferred over 2,4-D if spraying before wheat is well-tillered. Neither herbicide should be applied once the wheat is near or reaches the boot stage of growth, as application at that time can result in malformed heads, sterility, and significant yield loss (Figure 2).

Malformed heads from an application of 2,4-D at boot stage. Photo by Dallas Peterson, K-State Research and Extension.

Both 2,4-D and MCPA are available in ester or amine formulations. Ester formulations generally provide a little better weed control than amine formulations at the same application rates, but also are more susceptible to vapor drift. Ester formulations generally are compatible for use with fertilizer carriers, while amine formulations often have physical compatibility problems when mixed with liquid fertilizer.

Other herbicides used in the spring on wheat can be applied up to the time the flag leaf is visible, or later. Affinity BroadSpec, Affinity TankMix, Ally Extra SG, Express, Harmony + 2,4-D or MCPA, Harmony Extra, and Supremacy must be applied before the flag leaf is visible. Huskie, Weld, and WideMatch can be applied through the flag leaf stage. Herbicides that can be applied later in the spring – prior to the boot stage -- include Ally + 2,4-D, Amber, Finesse, Starane Ultra, and Starane Plus Salvo.

-- Dallas Peterson, Weed Management Specialist
dpeterso@ksu.edu

-- Curtis Thompson, Weed Management Specialist
cthompso@ksu.edu

3. Wheat disease update

I was out looking at research plots near Manhattan March 1. Wheat at this location ranged from tillering to near jointing (Feekes 3-5). I was not able to find leaf rust, stripe rust or stem rust at this location. Historically, this is a location where we often find leaf rust this time of year. The absence

of overwintering rust could be important for Kansas and the region. I will visit some other locations in Kansas this coming week to verify the status of disease in other regions. Based on the recent reports from Arkansas and Texas; however, we should be carefully monitoring the situation in southern wheat crop.

I was able to find low levels of powdery mildew, and Septoria tritici blotch in the research plots. I also suspect barley yellow dwarf will also be a factor at this location. Aphids were active at this location, and ladybird beetles were already active in the fields.

-- Erick DeWolf, Extension Plant Pathologist
dewolf1@ksu.edu

4. Wheat variety disease resistance summaries 2012

In 2011, foliar disease pressure on wheat in Kansas was relatively light because of the dry conditions both in Kansas in the states to our south. Other years, however, there is often one predominant disease on wheat, such as stripe rust in 2010.

When that occurs, there is a tendency to react to the most recent disease by shifting our wheat production to the varieties that remain resistant emerging problems. This can lead to the overuse of just a few varieties that often have the similar genes for resistance to that disease. This can quickly lead to a breakdown of that resistance gene, and the cycle of resistance/susceptibility starts all over again. With each cycle, we risk losing genetic diversity of the varieties grown at a regional level.

It would perhaps be better if producers could focus on the broader spectrum of potential disease problems and select varieties that have the least overall disease risk for the area of the state in which they farm.

The Historical Risk of Disease

The importance of wheat diseases is based on their potential to cause yield loss and how often it reaches damaging levels in eastern, central, and western Kansas. The relative importance of each disease is the product of historical records of disease losses in the state and expert opinion by wheat disease specialists.

In western Kansas, wheat streak mosaic, leaf rust and stripe rust are among the most damaging and common diseases and these diseases should be top priorities when selecting wheat varieties for that region.

In central and eastern Kansas, the environment is often more conducive for disease development, and additional factors should be considered when selecting a variety. Important diseases to consider in central Kansas include: soilborne mosaic, wheat spindle streak mosaic, barley yellow dwarf, leaf rust, stripe rust, tan spot, and Septoria leaf blotch.

Disease Resistance Groups

Sorting through all the information available about wheat varieties can be a complex and exhausting process. The disease resistance index I have proposed combines the historical estimates of regionally important diseases with the variety disease ratings. These summaries of information allow us to rank the varieties by their overall disease reaction and place them into “Disease Resistance Groups.” These groups are customized to for multiple regions of Kansas.

In the chart below, varieties with genetic resistance to the diseases that are historically important within a region are considered to have above-average disease resistance relative to more susceptible varieties. When considered along with the yield potential and other important agronomic traits of a variety, the groupings should help narrow the search for acceptable wheat varieties. The specific disease and insect ratings should be consulted once several candidate varieties are identified. The calculation of the index does not include all diseases and insect pests. Growers may establish their own priorities based previous crop production practices on their farms.

Disease resistance grouping	Eastern and Central	Western	
Above Average: Varieties have moderate or high levels of genetic resistance to *most* diseases common in this region	Armour Art Aspen (W) Billings Duster Everest Hitch Santa Fe SY Gold WB-Cedar WB-Stout	Armour Art Aspen (W) Bill Brown Billings CJ Duster Endurance Everest Fuller Hitch	Jackpot Overley Santa Fe Shocker SY Gold WB-Cedar WB-Stout Winterhawk
Average: Varieties have moderate of high level of genetic resistance to *some* of the diseases common in this region	2137 CJ Endurance Fuller Jackpot Karl/Karl 92 Overley Shocker Smoky Hill Winterhawk	2137 Danby (W) Hatcher Jagalene Jagger Karl/Karl 92 OK Bullet PostRock Protection CL Smoky Hill	T81 TAM 111 TAM 112
Below average: Varieties are susceptible to many of the diseases common in this region	Bill Brown Danby (W) Hatcher Jagalene Jagger OK Bullet PostRock Protection CL T81 TAM 111 TAM 112		

(W) = White wheat varieties

Other Factors

Wheat varieties often have one or more weaknesses that are not adequately addressed by genetic resistance. When resistance is not available, it may be possible to minimize the risk of severe yield losses with other management options. For example, foliar fungicides could be used to manage leaf rust when genetic resistance is lacking in an otherwise desirable variety. Wheat disease resistance groups can also provide guidelines varieties that might be likely to provide an economic yield response to the use of a foliar fungicide.

Pursuing this management option, however, may increase the input costs required to produce the crop if leaf rust emerges as a problem. This approach will be less effective for viral diseases, including soilborne mosaic, wheat streak mosaic, and barley yellow dwarf, because these diseases are difficult to control with other cultural practices.

For more information, see K-State publication MF-991: *Wheat Variety Disease and Insect Ratings 2011* at: http://www.ksre.ksu.edu/library/plant2/mf991.pdf

-- Erick DeWolf, Extension Plant Pathologist
dewolf1@ksu.edu

5. Soil calcium and magnesium levels: Does the ratio make a difference?

Is it important to have the proper ratio of calcium (Ca) and magnesium (Mg) in the soil? Many producers ask this question when they have their soil tested for nutrient levels. This question also arises at the moment of lime purchase, which can be an important source of Ca and Mg.

Calcium and magnesium are plant-essential nutrients. All soils contain Ca and Mg in the form of cations (positively charged ions, Ca^{++} and Mg^{++}) that attach to the soil clay and organic matter; these are also the forms taken up by crops. The relative proportion of these elements, as well as the total amount in the soil, depends mainly on the soil parent material. In Kansas soils, the levels of Ca and Mg are typically high and crop deficiencies are rare.

Soils typically have higher Ca levels than Mg. Table 1 gives the amount and ratios of Ca and Mg for some soils in Kansas. Both nutrients are present in large quantities. Unusual cases of Ca or Mg deficiencies may be found in areas of very sandy soils.

Table 1. Calcium, magnesium, and Ca:Mg ratio for several Kansas soils.

Soil	Ca	Mg	Ca:Mg ratio
	- - cmol kg^{-1} - - -		
Canadian-Waldeck	42	11	3.7
Carwile	22	4	5.2
Chase	198	30	6.7
Crete	111	29	3.8
Harley	202	15	13.2
Harney-Uly	200	12	16.1
Keith	127	38	3.3
Las	176	37	4.8
McCook	35	8	4.5
Onawa	163	28	5.8
Ortello	19	6	3.3
Parsons	80	23	3.5
Tully	158	38	4.2

Why would the ratio of Ca to Mg be important? The concept of an optimum Ca:Mg ratio started in the 1940s under the "basic cation saturation ratio" theory. The theory is that an "ideal soil" will have a balanced ratio of Ca, Mg, and K. According to this theory, fertilization should be based on the soil's needs rather than crop's needs. This concept of an ideal Ca:Mg ratio has been debated by agronomist over the years. The suggested ideal ratio according to the theory is between 3.5 and 6.0, but this has never proven to be of significance.

There is very little research evidence to support any effect, either positive or negative, of the soil Ca:Mg ratio on crop production and yield. Several research studies conducted in the laboratory and in the field show no effect of Ca:Mg ratio on crop yield. Despite this, the promotion of the ratio concept persists today. Furthermore, the initial work that derived this concept did not differentiate between crop response (alfalfa) due to the change in Ca:Mg ratio and the improvement in soil pH from lime application. It is reasonable to conclude that crop response can be expected from changes in soil pH rather than any change in the ratio of Ca:Mg.

One example of research conducted on this topic over the years is shown in Table 2. In that experiment, McLean and coworkers demonstrated the lack of relationship between Ca:Mg ratio and crop yield for several crops. The range of Ca:Mg ratios observed for the highest yields were not different from those observed for the lowest yields. The conclusion from that study was that to achieve maximum crop yield, attention should center on providing sufficient levels of these nutrients rather than attempting to find an adequate ratio.

Table 2. Ratio of Ca:Mg for five crop-years comparing the highest and lower yields obtained

	Corn	Corn	Soybean	Wheat	Alfalfa	Alfalfa
Yield level	- Ca:Mg ratio -					
Highest five	5.7 - 26.8	5.7 - 14.2	5.7 - 14.9	5.7 - 14.0	5.7 - 26.8	6.8 - 26.8
Lowest five	5.8 - 21.5	5.0 - 16.1	2.3 - 16.1	6.8 - 21.5	8.2 - 21.5	5.7 - 21.5

Adapted from: McLean, E.O., R.C. Hartwig, D.J. Eckert, and G.B. Triplett. 1983. Basic cation saturation ratios as a basis for fertilizing and liming agronomic crops. II. Field studies. Agronomy Journal 75: 635-639.

Conclusion

There is no reason to use the Ca:Mg ratio concept for a nutrient application or liming program. The center of attention should be the level of Ca and Mg in the soil rather than trying to manage the ratio. The relative concentration of Ca and Mg in commercial ag lime can be highly variable, and application should be based on the effective calcium carbonate (ECC) to achieve a target soil pH.

-- Dorivar Ruiz-Diaz, Nutrient Management Specialist
ruizdiaz@ksu.edu

6. Kansas Flint Hills Smoke Management Plan: The perspective from the city of Wichita

The Kansas Flint Hills Smoke Management Plan is entering its second year in 2012. This comprehensive plan is designed to minimize the movement of concentrated smoke plumes into large metropolitan areas through voluntary participation. All Flint Hills landowners and managers who conduct prescribed burns should know what is in this plan.

To help educate all those affected, a series of radio interviews is being broadcast weekly each Monday on K-State's *Agriculture Today* talk show. These programs will explain the many aspects of the new plan. *Agriculture Today* is part of the K-State Radio Network. The broadcast interviews are podcast online at www.ksre.ksu.edu/news/DesktopDefault.aspx?tabid=66.

The following is a slightly edited transcript of the first in the 2012 series of *Agriculture Today* radio broadcasts on the Kansas Flint Hills Smoke Management Plan. This is an interview with Kay Johnson, manager of the office of environmental initiatives for the city of Wichita, conducted by Eric Atkinson of the K-State Radio Network.

Q: Could you briefly outline for us how air quality is regulated in Wichita?

A: In Kansas, the local jurisdictions do not regulate air quality. The state of Kansas oversees our air quality on the state level, and the Environmental Protection Agency on the federal level. But in the larger metropolitan areas, such as Kansas City and Wichita, we are contracted to maintain the air quality monitors for KDHE. We have a website for the city of Wichita, and KDHE's day-to-day

ozone levels are listed on our web site. We monitor year-round priority pollutants under the National Ambient Air Quality Standards.

Q: That would include temporary exceedances in smoke content, right?

A: Yes. It's not just smoke from burning in the Flint Hills. We can have smoke from wildfires in Oklahoma and Texas influencing air quality in Wichita. We can also have ozone precursor chemicals coming up from Oklahoma and Texas that can also cause us to have exceedances. So potential problems can be transported to our area from a variety of regions.

Q: You were involved in the drafting of the Smoke Management Plan. As you look back on its first year of implementation, what's your general impression of how well it worked?

A: Those who were involved in the drafting of this plan believe it was a good first effort. We know that we made an impact with our educational efforts because people did start burning in March. It is a hopeful sign if burning can be spaced out over time rather than occurring all in the same day. Some people may have a more difficult time modifying their burning patterns than others. We understand that because we conduct prescribed burns in some of the parks within the city during that same time period. So we understand there is a very small window to get your burn in.

Q: That's probably something that many people are not aware of, that there is prescribed burning within the city of Wichita routinely every year.

A: Right. We have our parks on which we want to maintain the native grasses, too, and some of them are burned every year for some of the very same reasons that the Flint Hills are burned. We're trying to be very careful to spread out the timing of our burns as much as we can, but we know – just like those in the Flint Hills -- that there's a very small window. Sometimes we don't get to burn all our parks.

Q: It's also important to note that the city of Wichita does take action to limit its own air quality emissions, right?

A: Right. For decades, the city of Wichita has been involved in ozone monitoring. Even back in the '70s, we've had high levels of ozone at times in this area. We know that we generate our own emissions, and we've worked with our large industries to limit this. They have voluntarily reduced and restricted many of the chemicals they use and other things they do. Consequently, large businesses and industries are not the ones that are most responsible for the emissions in our area now. It is the smaller businesses and actions by individuals, as well as vehicles and lawn mowers, that have the largest impact on air quality in Wichita.

Q: So your message is that the smoke management plan is off to a good start, and you're hoping it will pick up more momentum this year?

A: Right. But again, in addition to attempting to reduce smoke concentrations from Flint Hills burning on any given day, it's also important to understand that we have a number of activities to reduce our own emissions within the Wichita area. Just as one example, we are going to start promoting a reduced idling policy initiative that involves fleet vehicles, and we're working with businesses and industry on that. We also have many other ongoing programs related to reducing emissions.

Q: It's an all-inclusive effort, right?

A: It is. It's not just one source that can cause ozone exceedances. It's many different sources and it's going to take a lot of effort to reduce overall emissions.

-- Steve Watson, Agronomy e-Update Editor
swatson@ksu.edu

7. Winter Canola Risk Management schools: March 13 and 15

Producers who would like to learn about the latest research on canola production in Kansas can attend either of two canola production schools in March, offered by K-State Research and Extension and the U.S. Department of Agriculture's Risk Management Agency (RMA).

The dates, locations and contact information for each school are:

• March 13 – McPherson, McPherson County Extension

• March 15 – Anthony, Bank of Anthony

Registration for each school begins at 8:30 a.m. with the program starting at 9 a.m. The program ends at approximately 2 p.m. Lunch will be provided at each location. To ensure adequate food and program materials are available, the organizers are requesting that participants pre-register approximately one week prior to the meeting by calling the appropriate Extension office.

The program and speakers include:

• Canola Variety Selection and Winter Survival – Mike Stamm, K-State Research and Extension canola breeder

• Winter Canola Establishment Strategies for Central Kansas – Kraig Roozeboom, K-State Research and Extension cropping systems specialist (McPherson location) and John Holman, K-State Southwest Research-Extension Center agronomist (Anthony location)

• Canola Pest and Disease Update – Bill Heer, agronomist-in-charge, K-State South Central Experiment Field

• Harvest Risk Management – Heath Sanders, Oilseed Agronomist, Producers Cooperative Oil Mill (McPherson location) and Josh Bushong, Oklahoma State University Extension canola specialist (Anthony location)

• RMA Update – Akilah Johnson, USDA Risk Management Agency, Topeka

• Great Plains Canola Association – Ron Sholar, Executive Director, and Jeff Scott, President

• Marketing Canola in Kansas – Monte Johnson, Merchandiser, ADM, Goodland

• Question-and-Answer Session and Discussion

For more information about the canola schools and to preregister, call the McPherson County Extension office at 620-241-1523 or the Harper County Extension office at 620-842-5445. Interested producers can also call Mike Stamm at 785-532-3871.

-- Mike Stamm, Canola Breeder
mjstamm@ksu.edu.

8. Webinar: Row Crop Planters for No-Till

You can sign up now for a free webinar on March 6 titled "Row Crop Planters for No-Till." This webinar is presented by Randy Taylor, Extension Biosystems and Agricultural Engineer, Oklahoma State University. The webinar will run from 9:30 to 10:30 a.m. He will speak on preparing for planting this spring and setting up no-till planters.

Space is limited. Reserve you webinar seat soon at:
https://www1.gotomeeting.com/register/746968032

After registering, you will receive a confirmation email containing information about joining the webinar. System requirements are Windows 7, Vista, XP, or 2003 Server; or Mac OSX 10.5 or newer.

-- DeAnn Presley, Soil Management Specialist
deann@ksu.edu

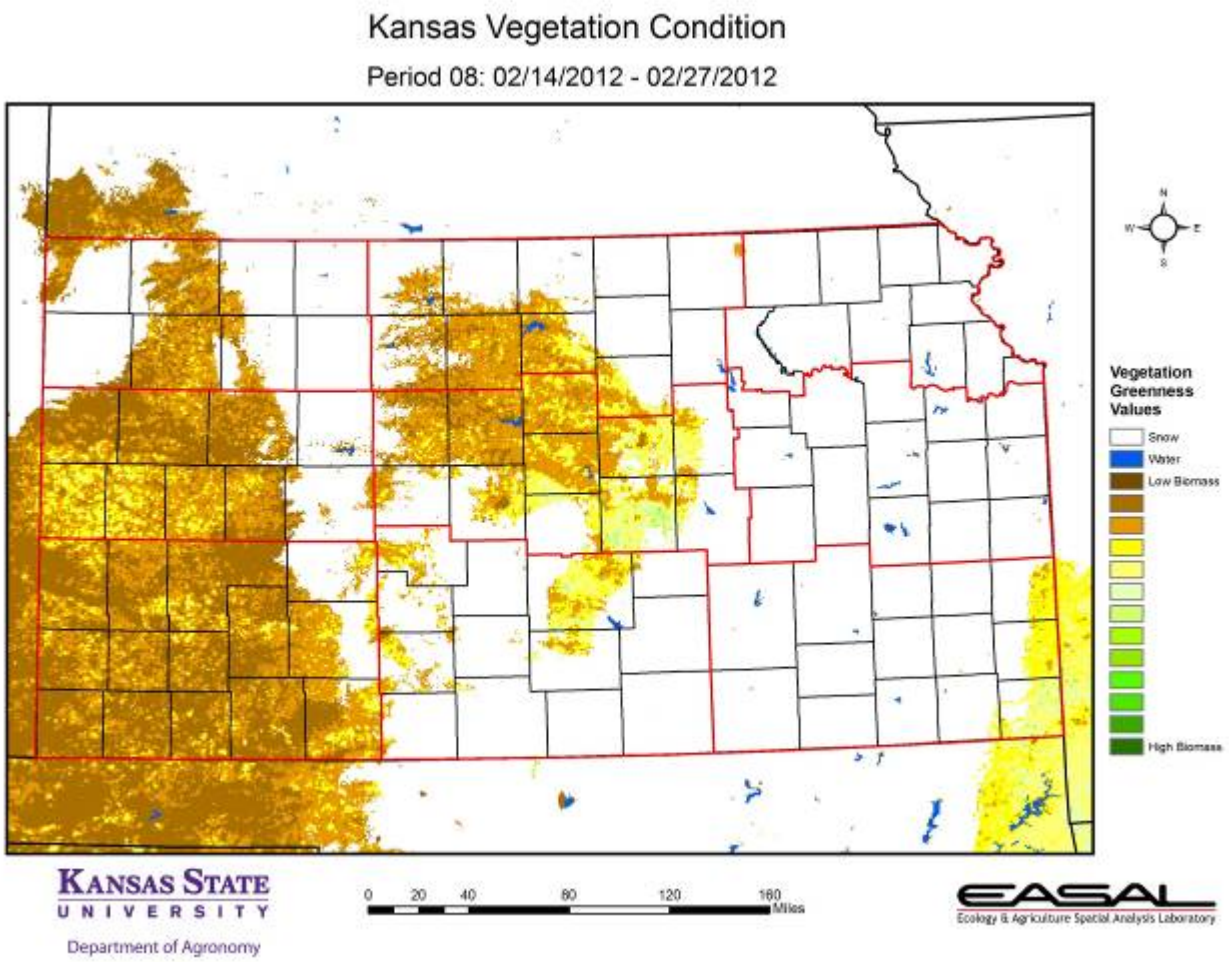
9. Comparative Vegetation Condition Report: February 14 – 27

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.

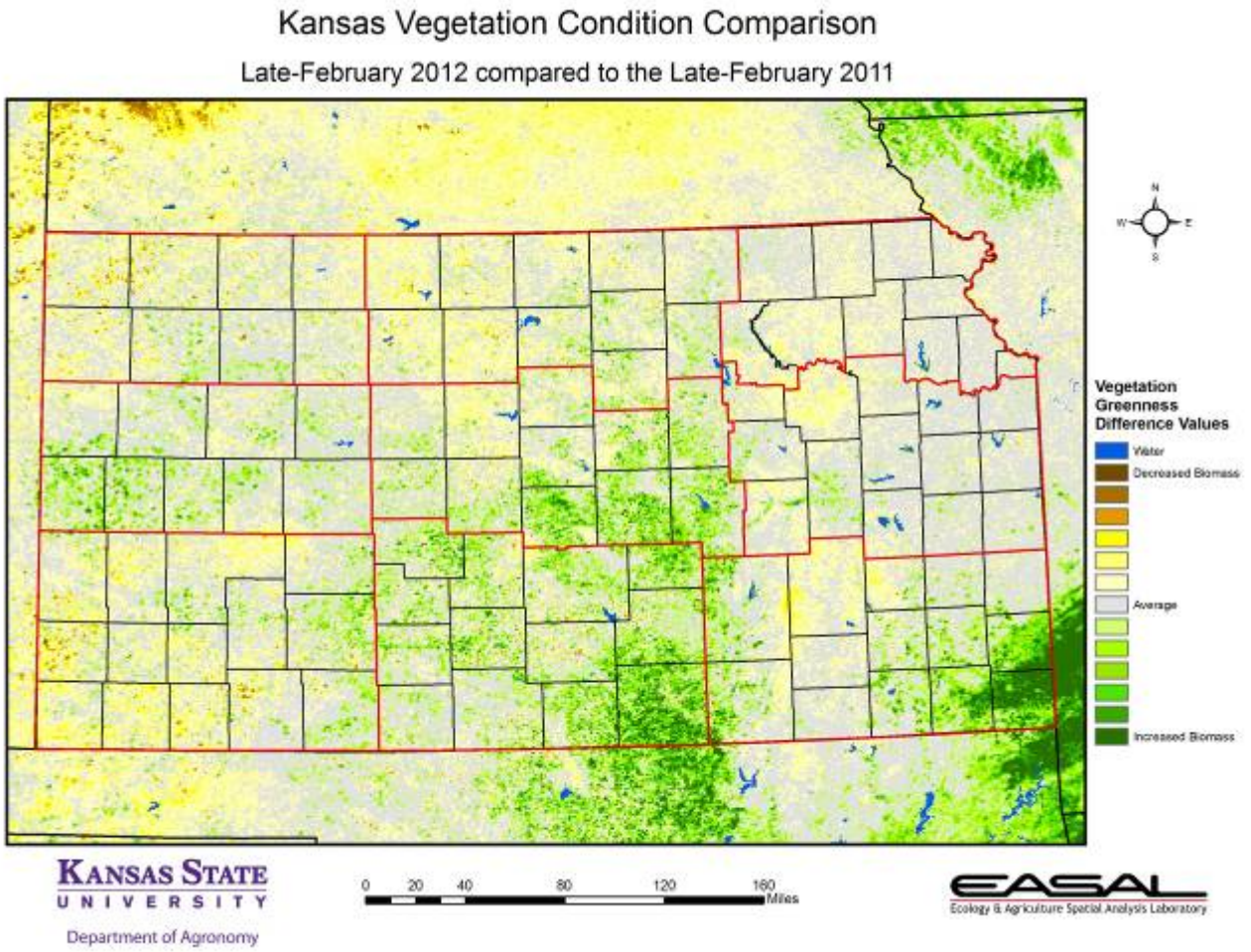
Two short videos of Dr. Kevin Price explaining the development of these maps can be viewed on YouTube at:
http://www.youtube.com/watch?v=CRP3Y5NIggw
http://www.youtube.com/watch?v=tUdOK94efxc

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.

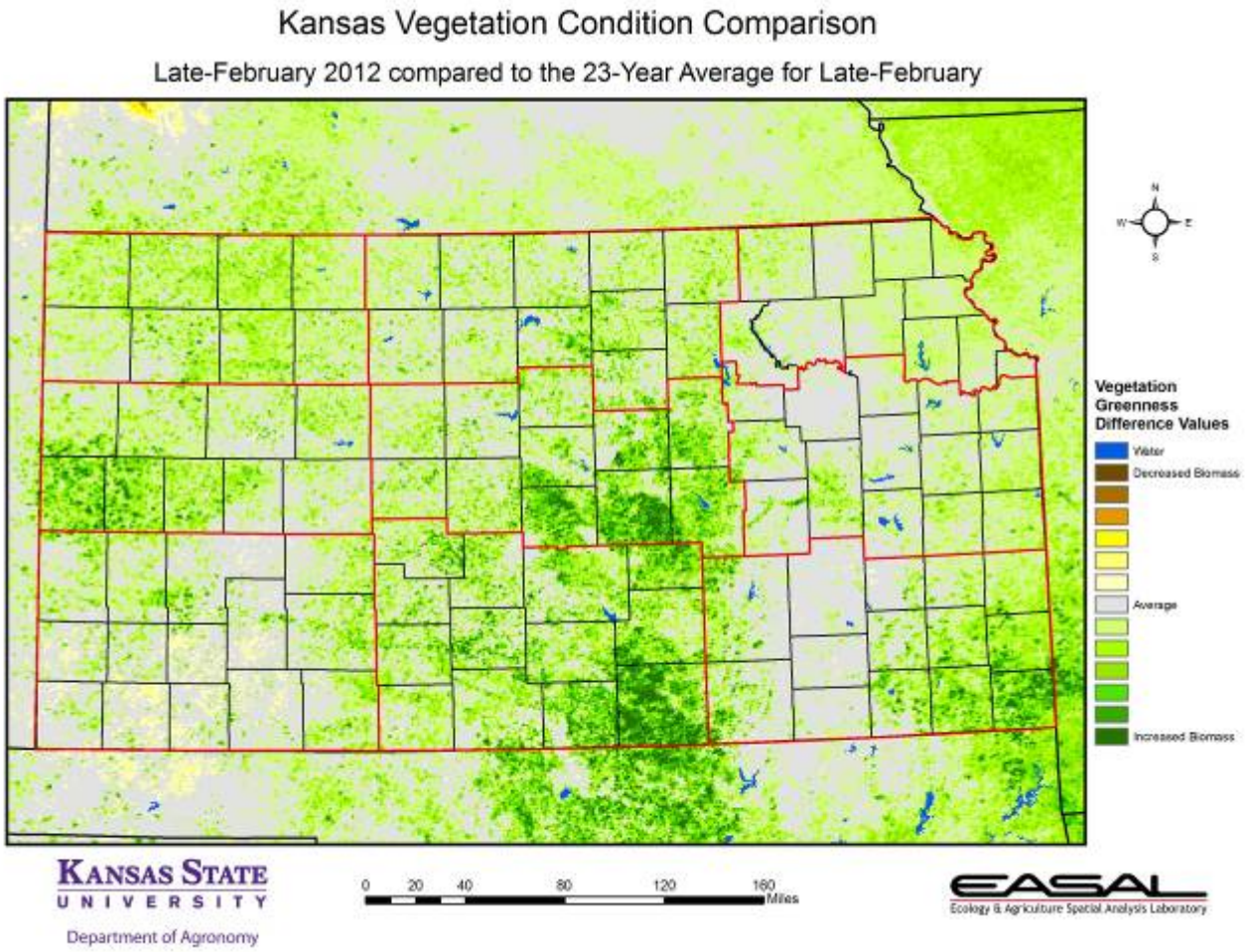
The maps below show the current vegetation conditions in Kansas, the Corn Belt, and the continental U.S, with comments from Mary Knapp, state climatologist:



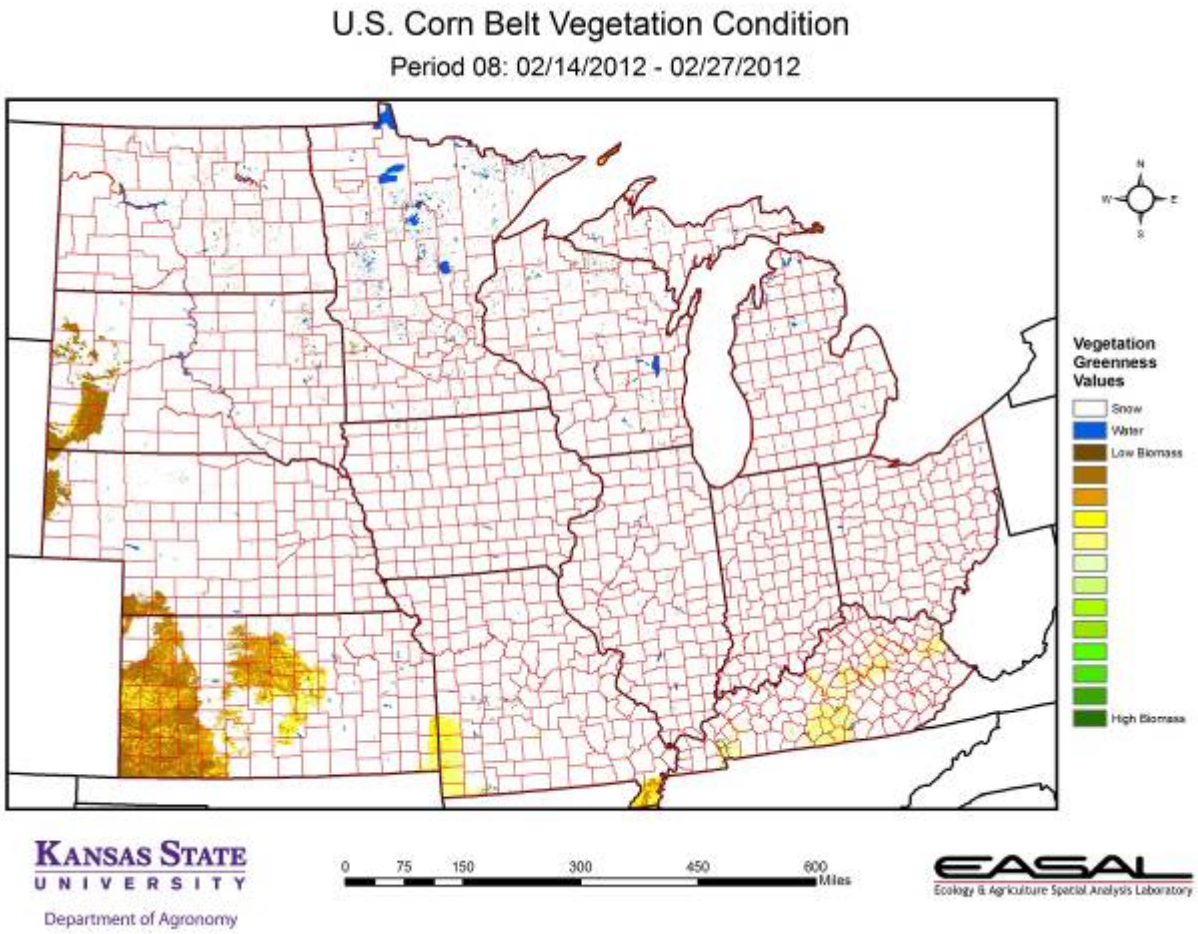
Map 1. The Vegetation Condition Report for Kansas for February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows snow was a smaller factor during this period. Also, the liquid equivalents for the snowfall in Kansas were limited.



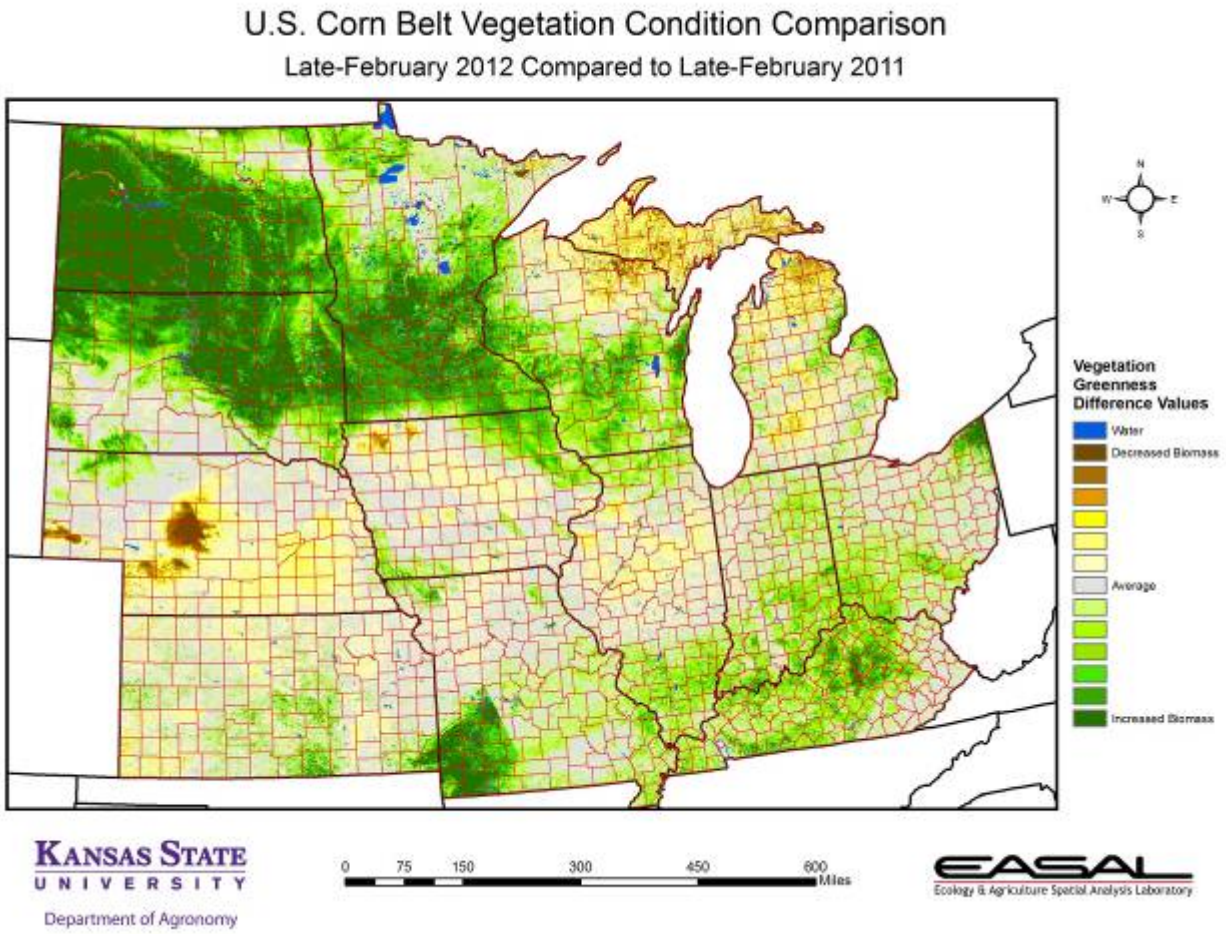
Map 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows higher NDVI values, particularly in the southeastern portion of the state. Part of this is due to the lighter snow cover this season, but most is due to the warmer temperatures in January and February. Temperatures in southeast Kansas in February averaged 4.5 degrees F higher than normal. This resulted in more photosynthetic activity than last year at this time.



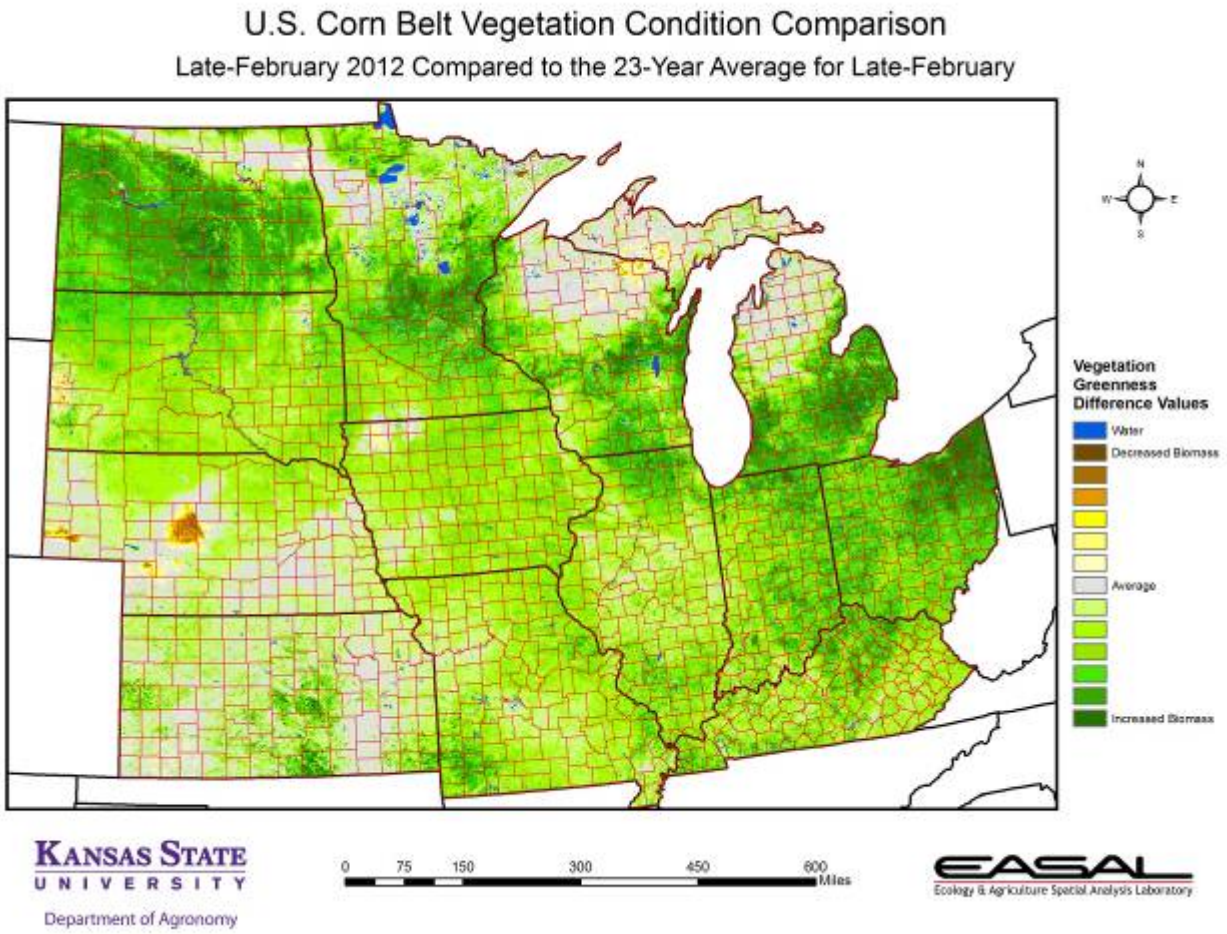
Map 3. Compared to the 23-year average at this time for Kansas, this year's Vegetation Condition Report for February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the NDVI values are higher than average. This is especially true from central to south central Kansas, and parts of southeast Kansas. Warmer temperatures have resulted in more photosynthetic activity than average at this time of the year.



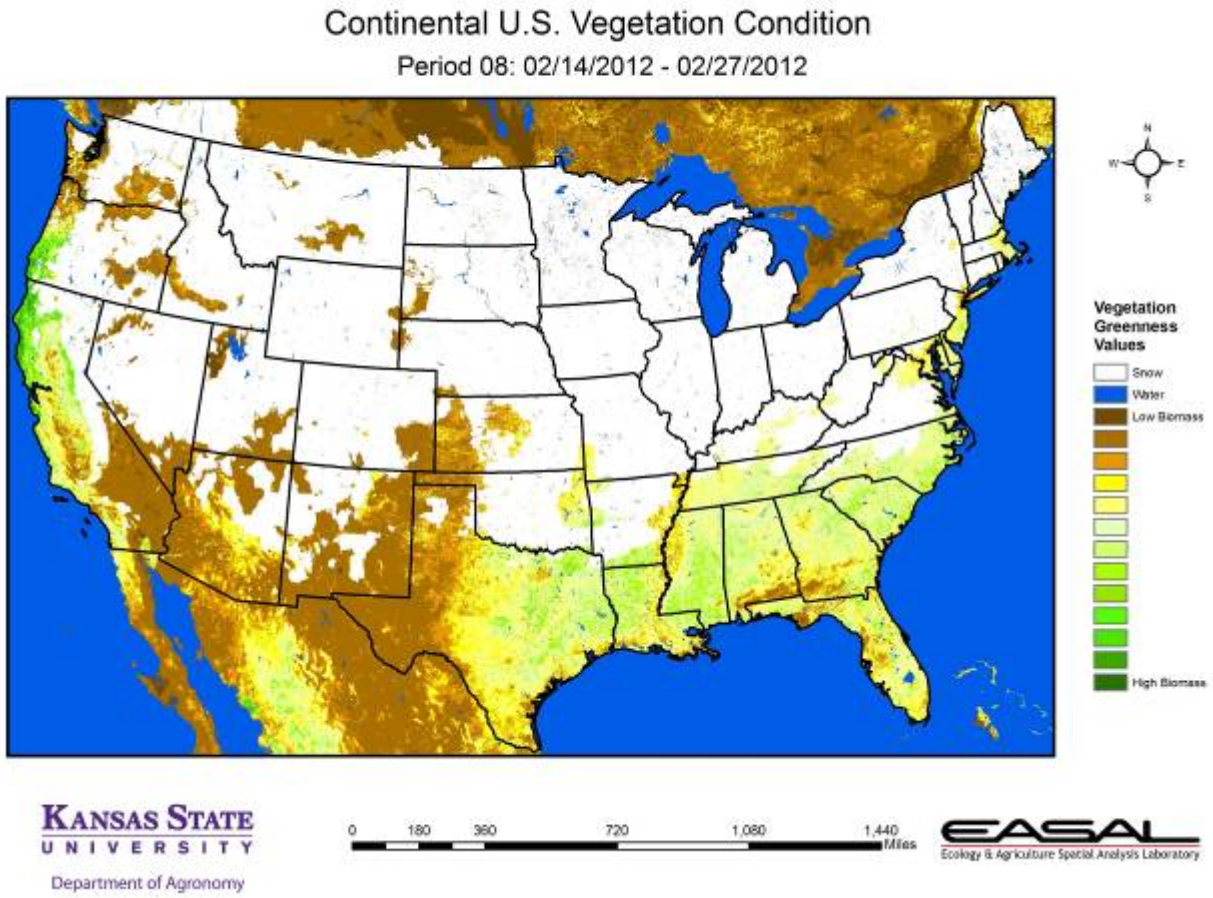
Map 4. The Vegetation Condition Report for the Corn Belt for February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the Corn Belt has finally had some snowfall. Seasonal totals are still well below average.



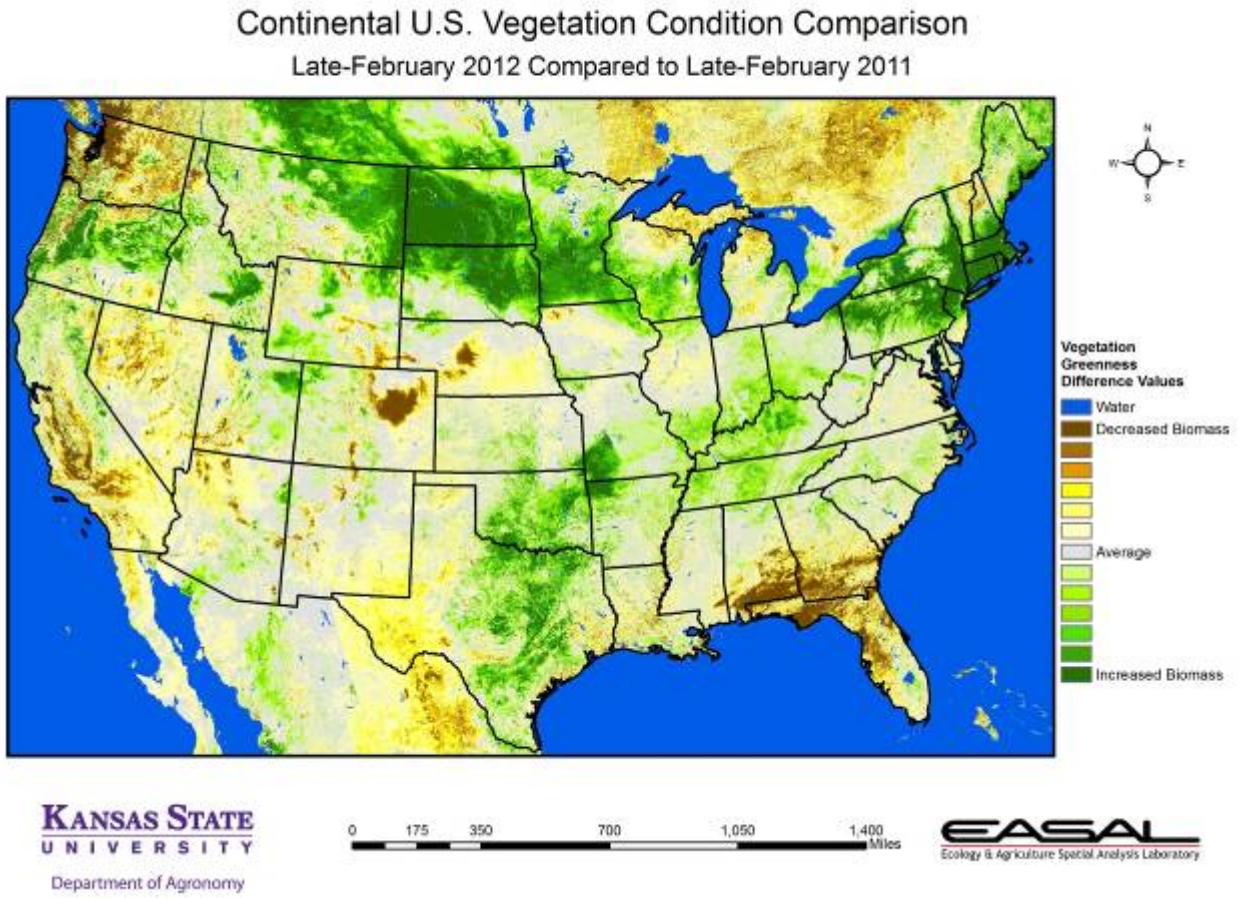
Map 5. The comparison to last year in the Corn Belt for the period February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows higher NDVI values across the Dakotas into southern Minnesota. Despite the recent snowfall, snow totals in these areas are much behind last year. The southwestern corner of Missouri also had a heavier snow cover last year. The lower NDVI values in Nebraska and the Upper Peninsula of Michigan correspond to areas of greater snow cover this year.



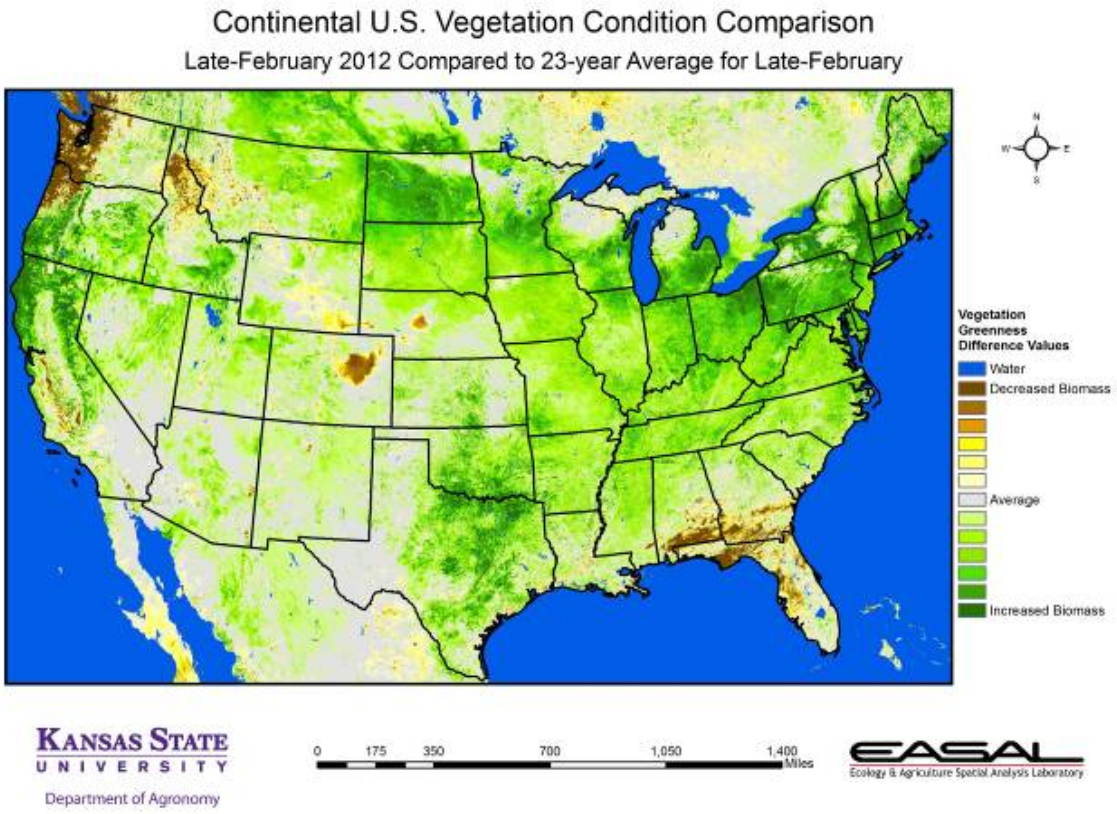
Map 6. Compared to the 23-year average at this time for the Corn Belt, this year's Vegetation Condition Report for February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows higher-than-average NDVI values across much of the area. The exception in Nebraska is due to snow cover, which has delayed vegetation in that area. In areas of northern North Dakota, Wisconsin, and Michigan, snow cover has been more persistent.



Map 7. The Vegetation Condition Report for the U.S. for February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that snow has touched much of the country at some time during the last two weeks of February. The Texas Panhandle saw a little snow, but the moisture had minimal impact on the extended drought in the region.



Map 8. The U.S. comparison to last year at this time for the period February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that remnants of the mid-February snow storm are most prominent in northeast Colorado and central Nebraska. Snow cover moderated the temperatures and reduced NDVI values in those areas, compared to last year. The impacts of the Gulf Coast drought are also visible.



Map 9. The U.S. comparison to the 23-year average for the period February 14 – 27 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that higher NDVI values are common across much of the country. In northern Idaho, northeast Colorado, and a small area of central Nebraska the lower values are due to more snow cover than average. In Oklahoma and Central Texas higher NDVI values are due mainly to the wetter- and milder-than-average conditions that have prevailed in late-February. Southern Alabama, Georgia, and most of Florida have not seen as much moisture, and are still in the extreme to exceptional drought category. As a result, NDVI values in this region are much lower than average. Although portions of west Texas are in a similar drought, NDVI values there are much closer to the 23-year average since dry conditions are more the norm in that region than in the Southeastern states.

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.

-- Mary Knapp, State Climatologist
mknapp@ksu.edu

-- Kevin Price, Agronomy and Geography,
Remote Sensing, Natural Resources, GIS
kpprice@ksu.edu

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

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