Issue 494

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eUpdate

02/20/2015

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. Tiller loss and some winterkill on wheat in northwest Kansas

In the February 13, 2015 issue of the Agronomy eUpdate, we described some apparent winterkill on heavily grazed wheat in southwest Kansas. There has also been tiller loss throughout northwest Kansas and occasional symptoms of winterkill injury to crowns on some fields of wheat in far northwest Kansas counties. Tiller loss is more widespread than outright winterkill.

Temperatures have fluctuated considerably this fall and winter, starting in November with a sudden and sharp plunge to very cold conditions. The wheat was bigger than normal and actively growing at the time of the sharp drop in temperatures, which helped make the wheat more prone to injury. Since that time, temperatures have fluctuated from unusually warm to unusually cold. Snow cover has been limited for the most part, so the survival of the wheat depends on crown depth, soil conditions around the crown, exposure of the plants to north winds and pools of cold air, moisture conditions of the soil, residue protection, varietal differences, and perhaps other factors.

Some preliminary varietal differences have been noted in at least one demonstration plot at this time, but we will have to wait and see whether these differences persist after greenup, and whether the varietal responses are consistent across different areas before drawing any conclusions about winterhardiness of varieties.

The photos below are from Cheyenne and Thomas counties, taken on Feb. 19.

Figure 1. Many fields have a heavy mat of topgrowth that has been burned back by cold temperatures. All photos taken Feb. 19, 2015 by Jeanne Falk Jones, K-State Research and Extension.

Figure 2. After removing most of the topgrowth, it is evident that the foliage has been burned back all the way to ground level.

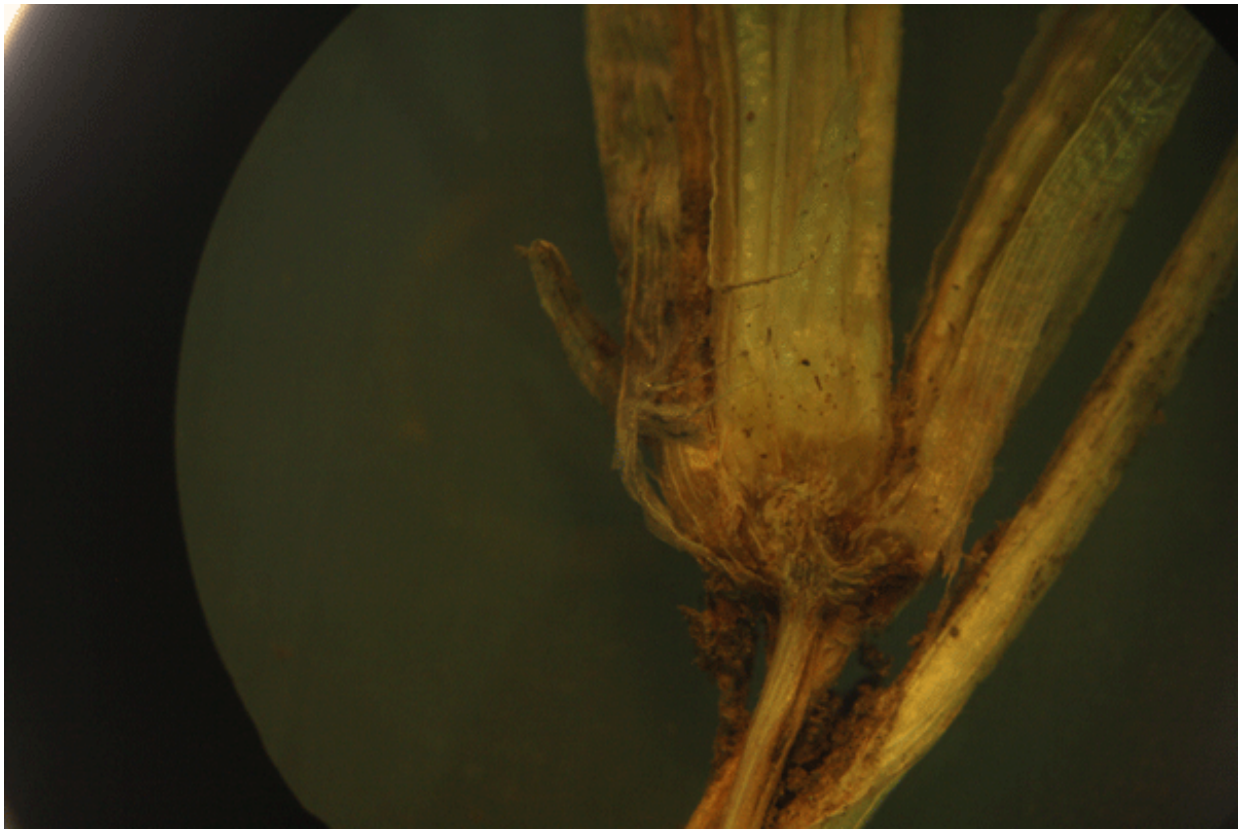

Figure 3. In this case, after pulling up a plant and slicing it open, it is evident that the crown is brownish and dead.

Figure 4. Comparison of crown with winterkill injury (left) and healthy crown.

Figure 5. Where the plants are alive and well and the crown is healthy, there are new leaves emerging through the mat of dead foliage.

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2. When to take cattle off wheat to maximum total grain yield/pasture grazing returns

Grazing cattle on wheat in late winter/early spring always requires good management to maximize total returns from grain yield and cattle gains. There's a fine line between getting more income from cattle grazing and leaving the cattle on wheat just a little too long so that grain yield is reduced.

Grazeout may be more profitable this year than removing the cattle and harvesting the wheat for grain, so be sure to take total potential return into consideration.

After greenup is underway and before the wheat has reached jointing, it is important to scout fields closely for signs of the "first hollow stem" (FHS) stage if you plan to harvest the wheat for grain. FHS occurs as the wheat switches from the vegetative stage to the reproductive stage of growth.

When the leaf sheaths become erect, the developing growing point, which is below the soil surface, will soon begin to form a tiny head. Although the head is quite small at this point, it has already established some important yield components. At this stage, the maximum potential number of spikelets is determined. Sufficient nitrogen (N) should already be available in the root zone at growth stage in order to affect the potential number of seeds per head.

Once the embryo head has developed, the first internode will begin to elongate pushing the head up through the leaf sheaths. This first internode will be hollow. This will be visible before you can actually feel the first node (joint, located just above the first internode). Prior to this stage the nodes are all formed but tightly packed together and hard to see.

FHS is the point at which a half-inch or so of hollow stem can first be identified above the root system and below the developing head. FHS occurs when the developing head is still below the soil surface, which means that producers have to dig plants out of the ground to do the examination.

To look for FHS, start by digging up some plants from fields that have not been grazed. Select the largest tillers to examine. Cut off the top of the plant, about an inch above the soil surface. Then slice the stem open from the crown area up. Look for the developing head, which will be very small. Next, see if you can find any hollow stem between the developing head and the crown area. If there is any separation between the growing point and crown, the wheat plant is at FHS. FHS will occur between a few days and a week or more prior to jointing, depending on temperatures.

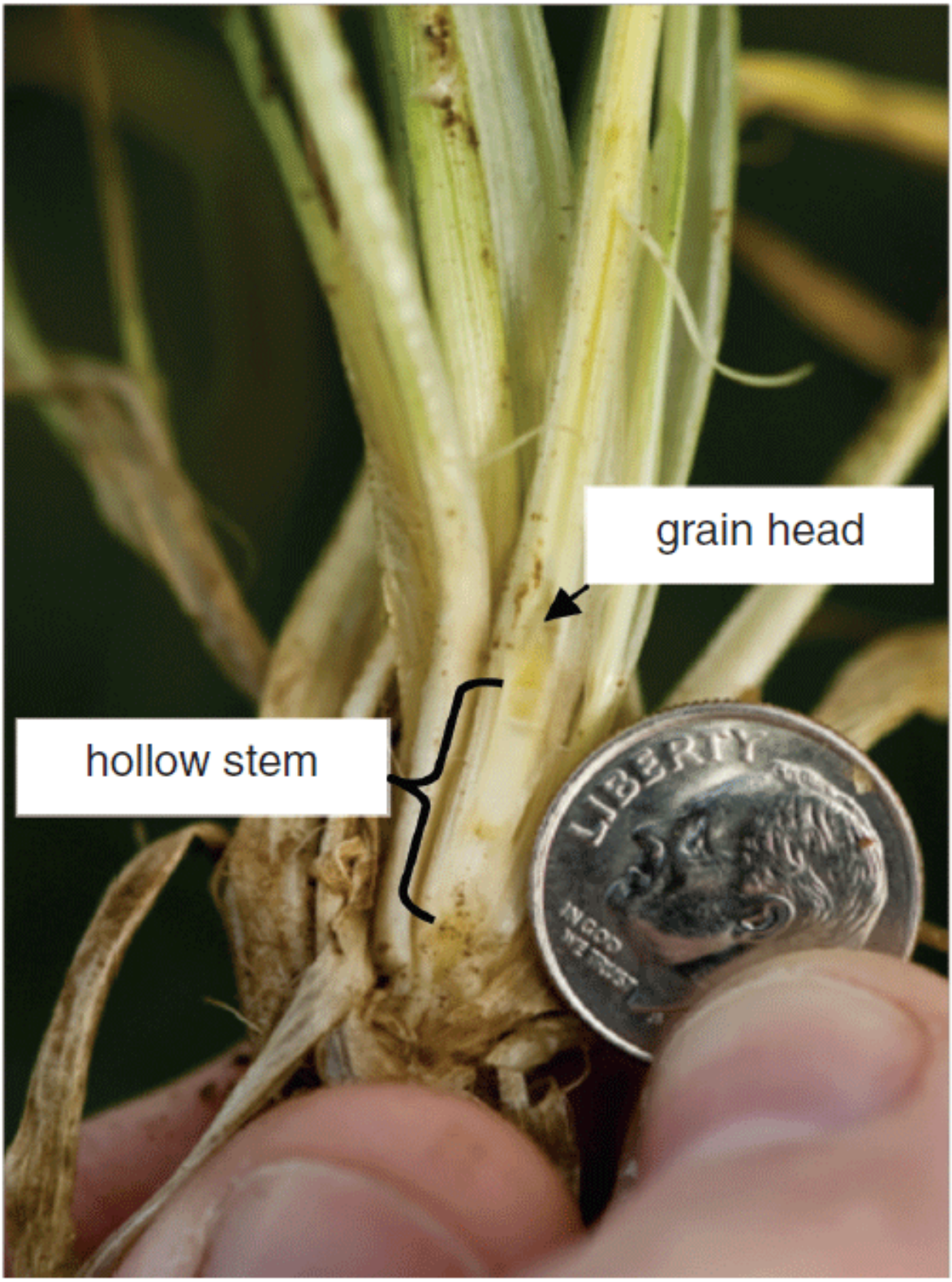

Figure 1. First hollow stem occurs when hollow stem equivalent to the diameter of a dime (1.5 cm) is present below the developing grain head. Source: First Hollow Stem: A Critical Wheat Growth Stage for Dual-purpose Producers**, Oklahoma State University publication PSS-2147, by Jeff Edwards, OSU Extension small grains specialist, and Gerald Horn, OSU beef cattle**

nutritionist.

If the wheat has reached FHS, cattle should be removed to prevent grain yield loss. Studies at Oklahoma State University have shown that grazing past first hollow stem decreases grain yield by as much as five percent per day or as little as one percent per day. Environmental conditions after cattle removal and the amount of green leaf area remaining on the wheat are among the factors that determine grain yield potential after grazing. Grain yield losses may be at the low end of this range for the first few days of grazing after FHS. Still, it is easy for producers to be late by a few days in removing livestock as they wait for obvious nodes and hollow stems to appear, and even the first few days can be significant.

Two things are observed when wheat is grazed too long: 1) fewer heads per acre because the primary tiller has been removed and 2) smaller and lighter heads than expected because leaf area has been removed. As cattle continue grazing, the wheat plant is stressed and begins to lose some of the tillers that would produce grain. A little later, if there is not enough photosynthate, the plant begins aborting the lower spikelets (flowers where seed develops) or some of the florets on each head. Finally, if there is not enough photosynthate during grain filling, the seed size will be reduced and if the stress is severe enough, some seed will abort.

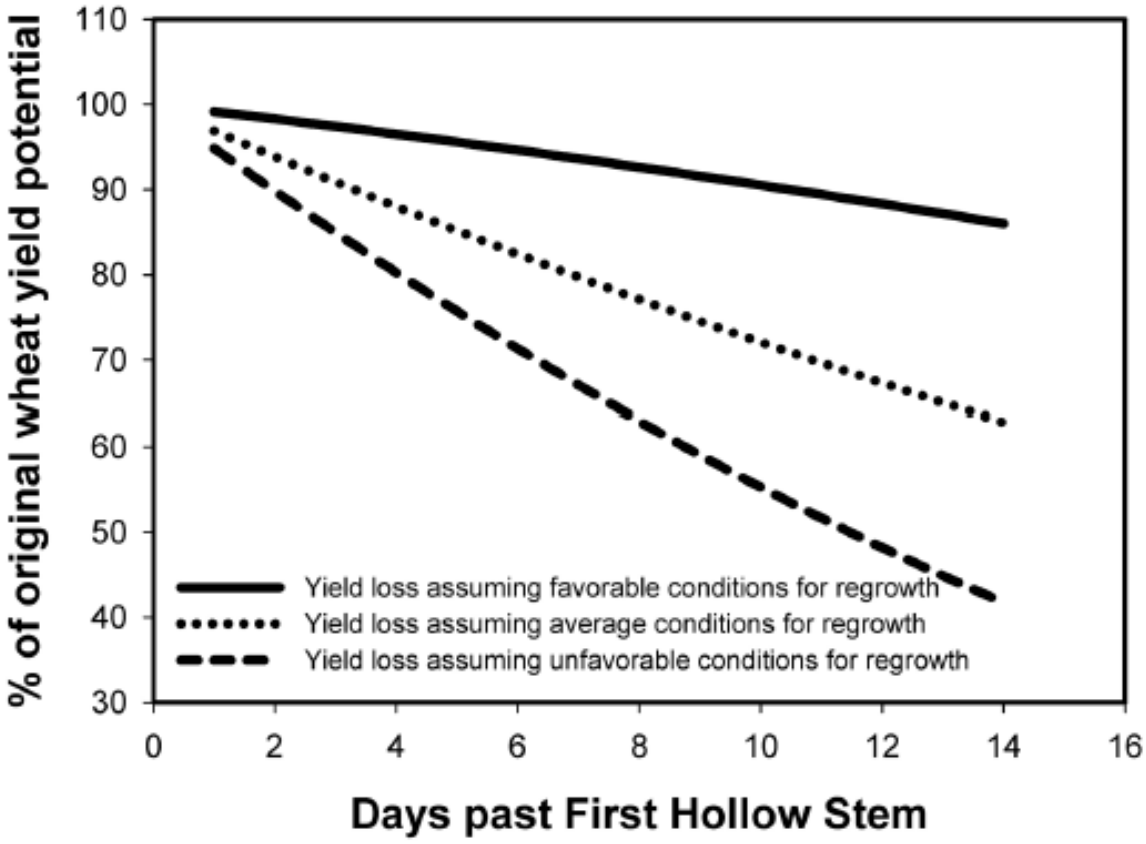

Figure 2. Grazing past first hollow stem has been shown to reduce grain yield by as much as five percent per day or as little as one percent per day. Factors such as variety, grazing intensity and environmental conditions will determine the actual yield penalty for grazing

past first hollow stem. This figure shows the anticipated yield loss for grazing past first hollow stem given favorable (solid line), unfavorable (dashed line) and average (dotted line) conditions for wheat regrowth following grazing termination. Source: First Hollow Stem: A Critical Wheat Growth Stage for Dual-purpose Producers**, Oklahoma State University publication PSS-2147.**

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3. Spring oats for forage production

Over the last several years, cattle producers have found spring oats to provide excellent spring pasture and hay. With reasonable fertilizer inputs, spring oats can provide an excellent bridge for producers short on available pasture in April and May until perennial pasture or summer annual forage production becomes available.

Oat pasture should be treated the same as winter wheat pasture in terms of stocking rates and time to initiate grazing. Since grain production is not practical or recommended under grazing, producers should treat oat pasture as a graze-out program or remove it when ready for the next crop. Oats are easily controlled by a variety of herbicides, such as glyphosate and atrazine. The length of effective grazing is a function of stocking rate and weather. Rotational grazing may extend the window for effective pasture production. Oat pasture is also being used successfully in sheep production.

Properly stored, oat hay also provides a high-quality feed source. Studies at the South Central Experiment Field near Hutchinson indicate hay yields on a dry weight basis of three to five tons per acre are typical under average weather conditions. The average yield across 20 varieties at the Experiment Field is four tons per acre. Hay yield was determined at late milk/early dough stage, with an average moisture content of 60%.

These hay yields were obtained with 75 lbs/acre of nitrogen (N) applied preplant and an additional 50 lbs/acre N broadcast approximately six weeks after emergence. Lower total N rates will result in adequate forage production, especially hay. However, to maximize grazing opportunities, it is important to supply adequate N.

For hay, late boot to early heading is the optimal timing to balance quantity with quality considerations. Harvested at the dough stage, hay should have an approximate TDN of 56% with 10% protein, both on a dry basis. A nitrate test is recommended. Prussic acid levels should not be a concern.

Silage is another option for spring oats. Oats should be harvested for silage from late milk through early dough stages. Expect silage with a TDN of approximately 60% and 9% protein on a dry weight basis.

Finally, oats in Kansas may be planted for grain with expected yields of 50 or more bushels per acre most years. However, typical growing conditions during grain fill normally result in low test weights, making the grain unsuitable for food use. Grain from oats is acceptable as livestock feed; however, a market should be identified prior to planting since few markets exist locally.

Cultural practices

Before planting oats, check the herbicide history of the desired field. Oats are especially sensitive to triazine herbicides. Also, if producers are planting oats for pasture and are considering applying a herbicide for weed control, carefully check the pesticide label for grazing restrictions.

The optimal planting date depends on location. In southeast Kansas, the optimal date ranges from February 20 to March 15. In northwest Kansas, the optimal date is from the first week of March through the end of March. For most of the state, planting is recommended from late February

through the mid-March. After the optimal planting range, grain production will be limited most years. However, adequate pasture is practical after the optimum planting date. To maximize pasture production potential, it is necessary to plant as early as possible.

A seeding rate of two bushels per acre is recommended. Under good soil moisture or irrigation, three bushels per acre may be preferable for grazing. When grown for hay or silage, fertility recommendations are similar to those for grain production: 75 to 125 lbs N per acre. When planted for grazing, an additional 30 lbs N per acre is recommended. As always, a soil test is recommended.

A fine, firm seedbed is necessary for optimal production, regardless of the tillage system used. Under adequate soil moisture conditions, a seeding depth of ½ to 1 inch is preferable. Oats may be planted at depths greater than one inch under dry conditions; however, oat seedlings are less vigorous than wheat and can experience difficulties emerging at deeper planting depths, especially after crusting rains.

To facilitate planting and maximize forage production, winter annual weeds should be controlled either mechanically or with a burndown herbicide prior to planting. Weed control is best achieved through a good stand with rapid growth. Before using any herbicides consult the label.

For more information, see K-State publication MF-1072, *Small Grain Cereals for Forage* at:
http://www.ksre.ksu.edu/bookstore/pubs/MF1072.pdf

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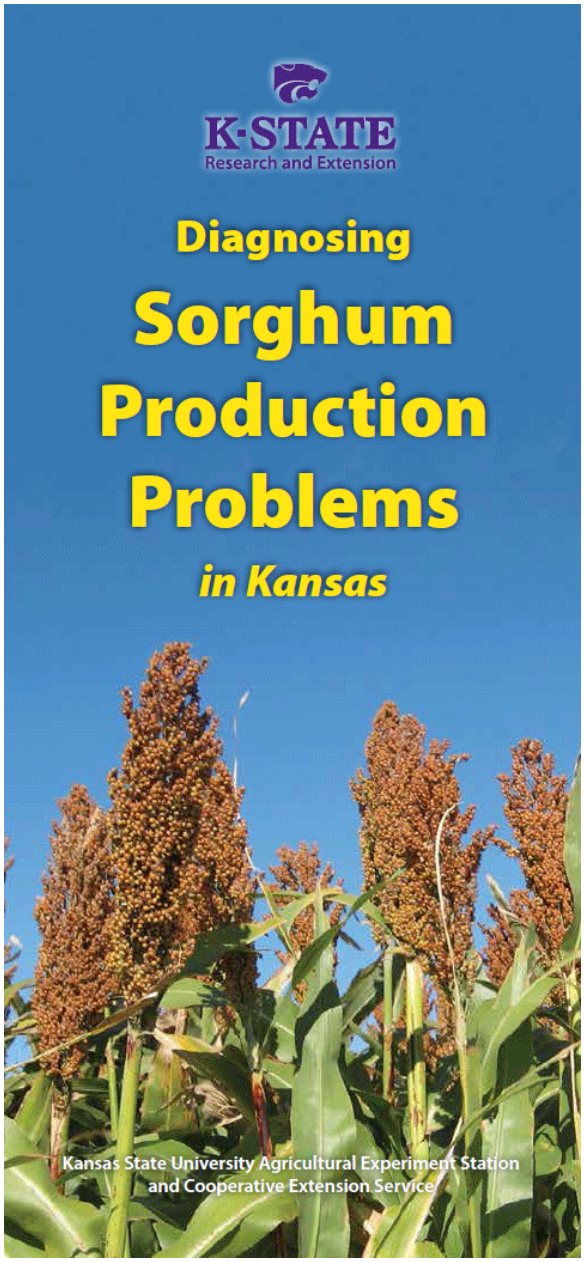
4. New K-State sorghum publication now available online

A newly revised and updated version of *Diagnosing Sorghum Production Problems in Kansas*, S-125, from K-State Research and Extension has been published. You can find it online at: http://www.ksre.ksu.edu/bookstore/pubs/S125.pdf

This 52-page publication is authored by Ignacio Ciampitti, Crop Production and Cropping Systems Specialist; Dorivar Ruiz Diaz, Nutrient Management Specialist; Doug Jardine, Plant Pathology Specialist; Jeff Whitworth, Entomology Specialist; Holly Schwarting, Entomology Research Associate; and Curtis Thompson, Weed Management Specialist.

This guide begins with early-season problems and continues through the growing season until harvest. Careful inspection of plants, soil, and the overall field condition is necessary in solving production problems. This publication demonstrates what to look for at various points during the growing season and what tools you'll need to diagnose problems.



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5. Comparative Vegetation Condition Report: February 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 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, service climatologist:

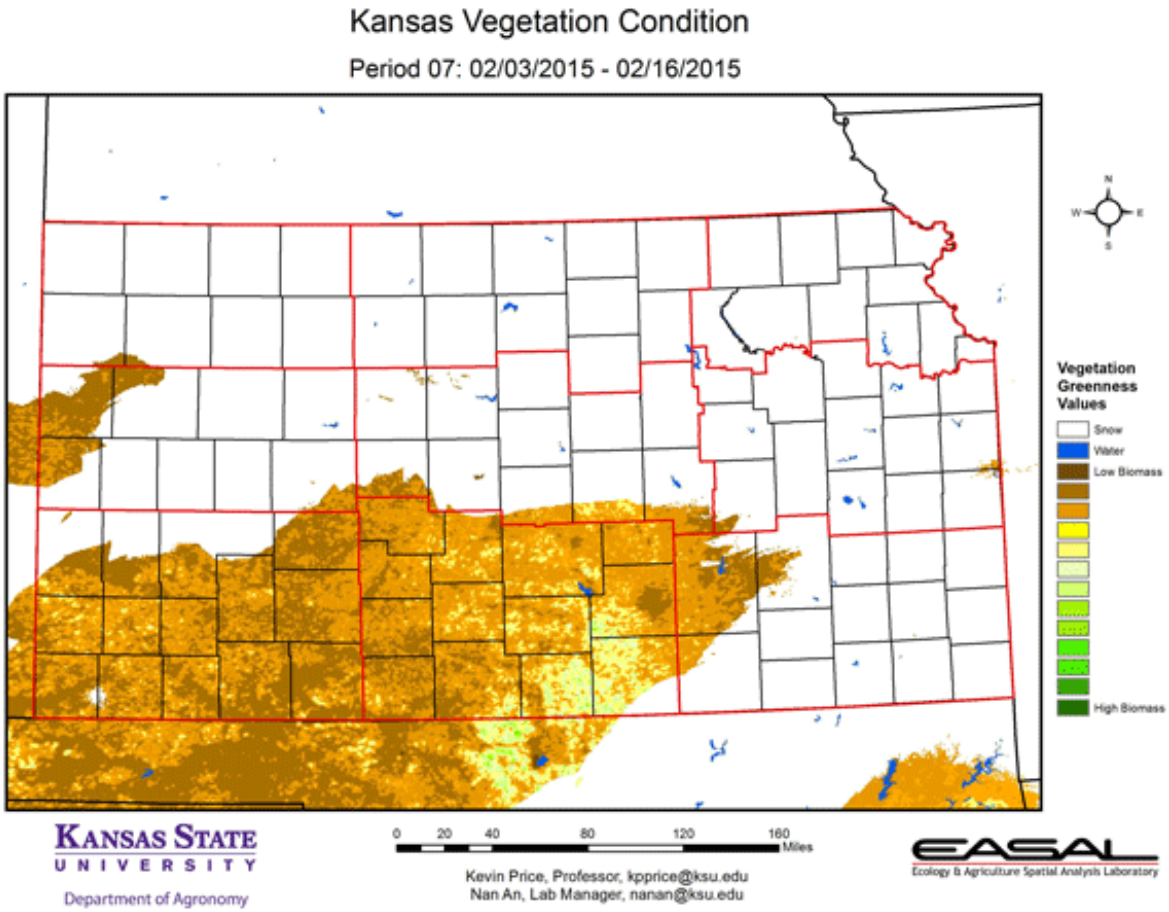

Figure 1. The Vegetation Condition Report for Kansas for February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that southwest and south central Kansas missed the snow events during this two-week period. Moderate snowfall was reported in northeast Kansas.

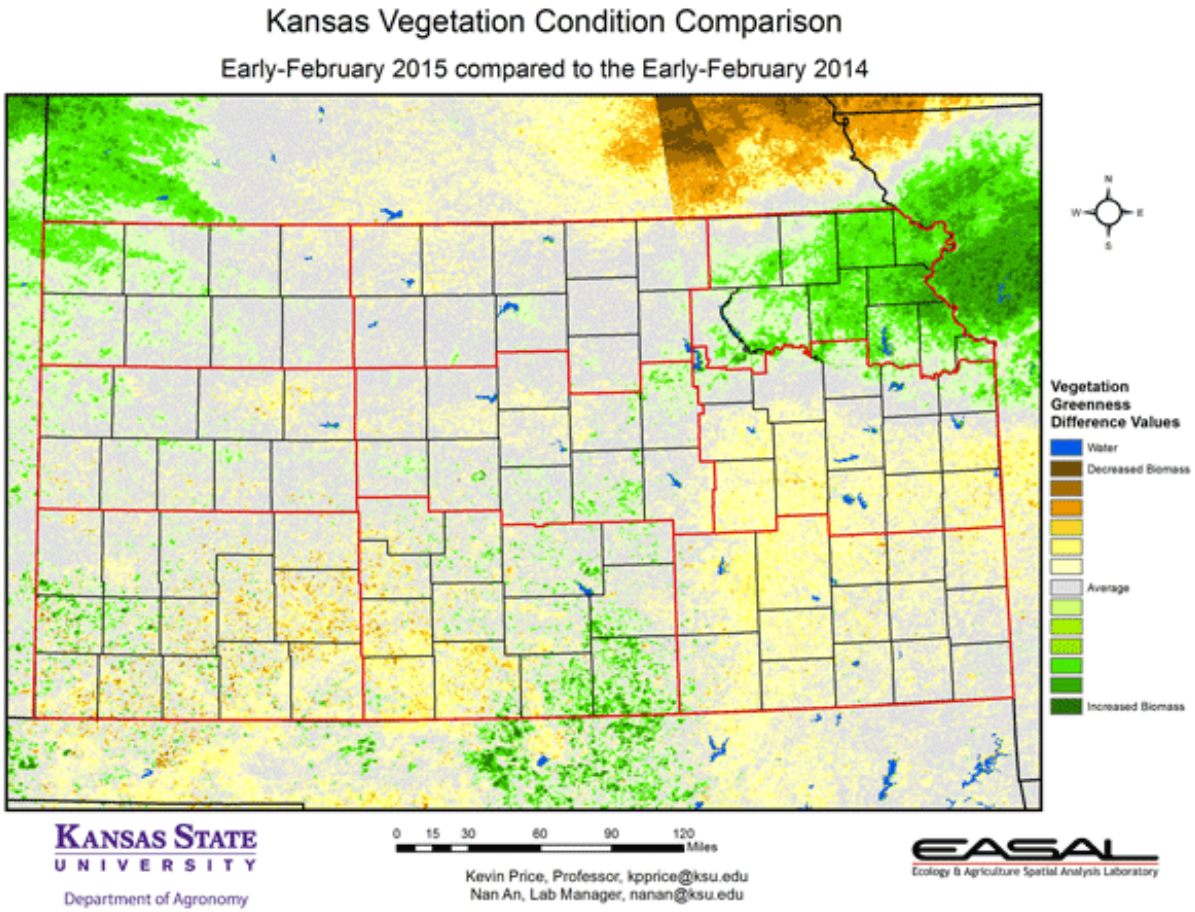

Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the greatest increase in NDVI readings is in extreme northeastern Kansas. Last year, this area had much higher snow totals than this. For example, Lawrence reported 12.1 inches of snow during this two-week period in 2014. This year, the report was just 2 inches.

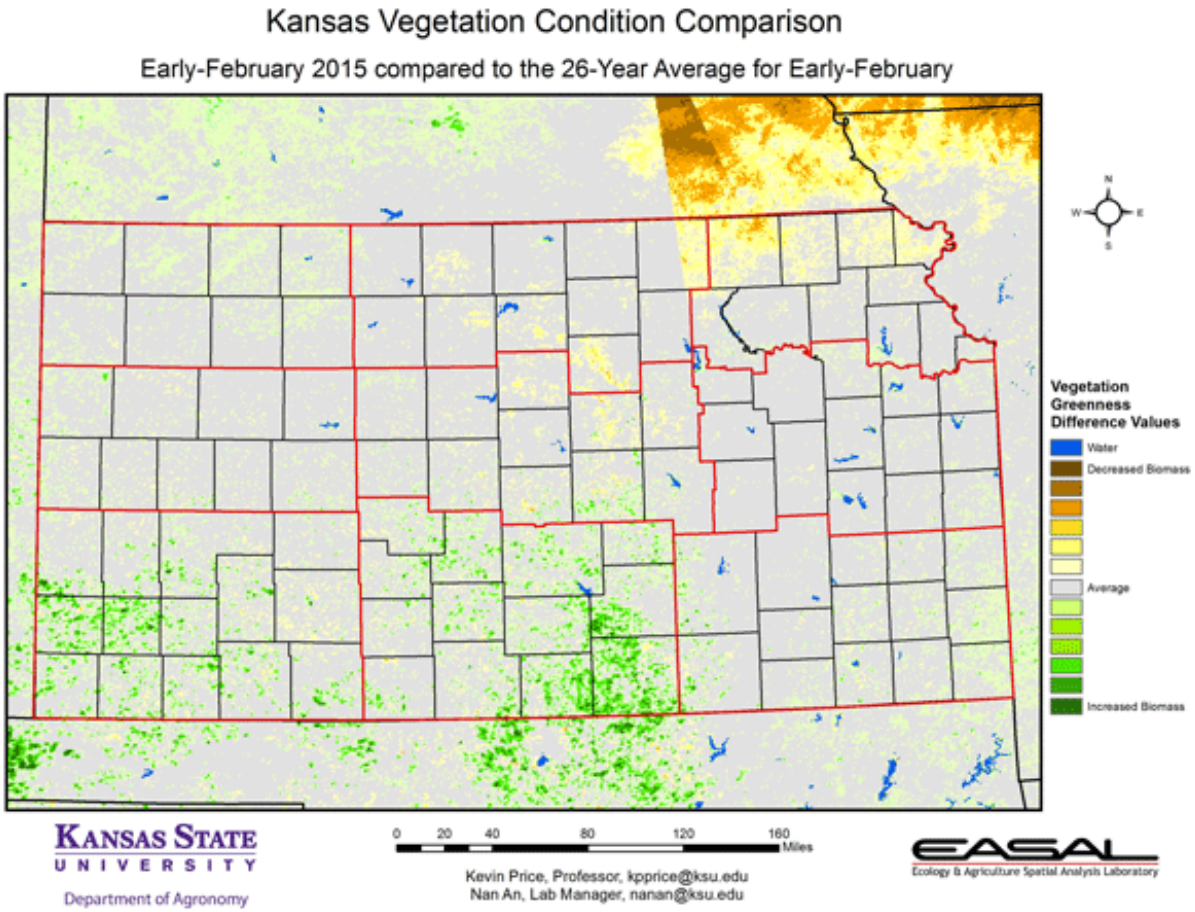

Figure 3. Compared to the 26-year average at this time for Kansas, this year's Vegetation Condition Report for February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that greater-than-average NDVI values are confined to extreme southwest Kansas and parts of south central Kansas. Sumner County, in particular, has higher-than-average photosynthetic activity. Warmer temperatures have favored development in these areas.

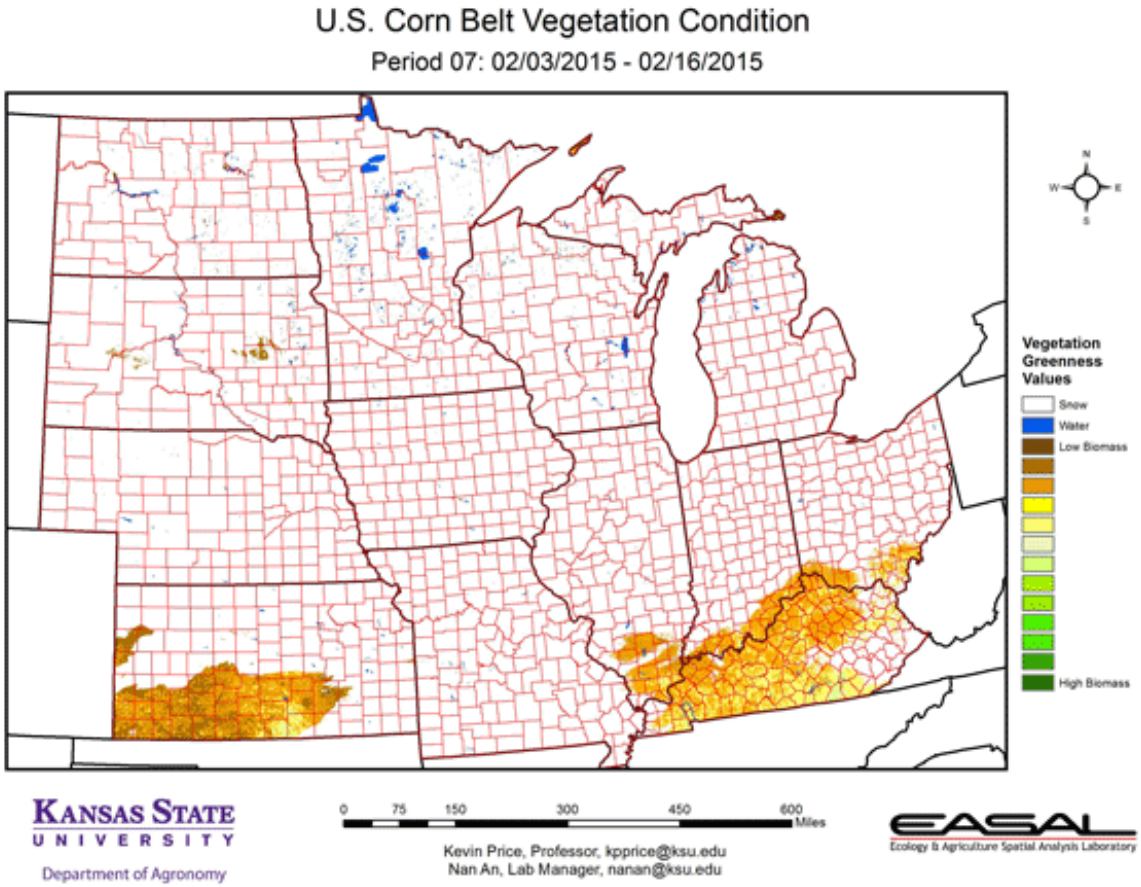

Figure 4. The Vegetation Condition Report for the Corn Belt for February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that snow during this two-week period missed southwestern and south central Kansas, as well as most of Kentucky. This does not reflect the snow that fell in the eastern portions of the Corn Belt from Wednesday night into Thursday, Feb. 18-19.

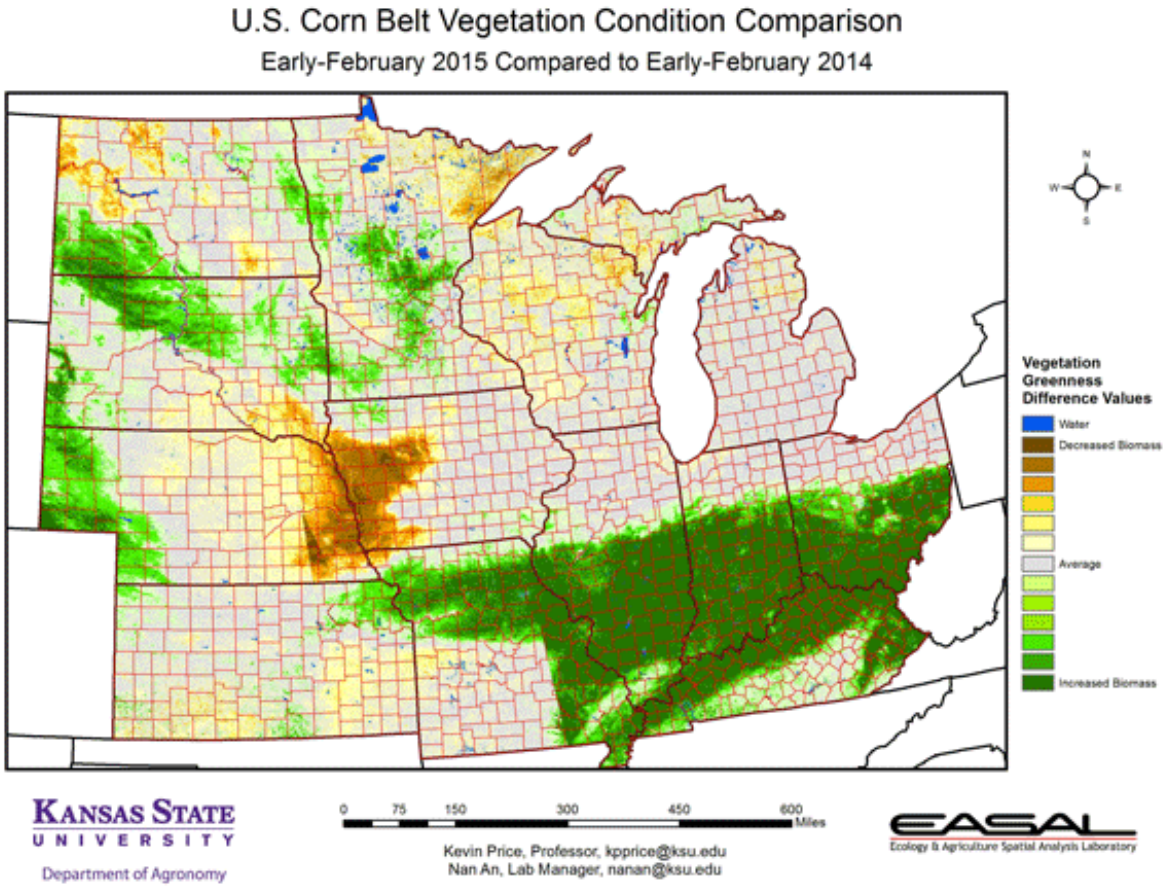

Figure 5. The comparison to last year in the Corn Belt for the period February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that there is a sharp gradient with less snow to the south. Louisville, on the border between Indiana and Kentucky, reported just 3 tenths of an inch of snow this year. Last year, it reported 7.1 inches of snow in the same period.

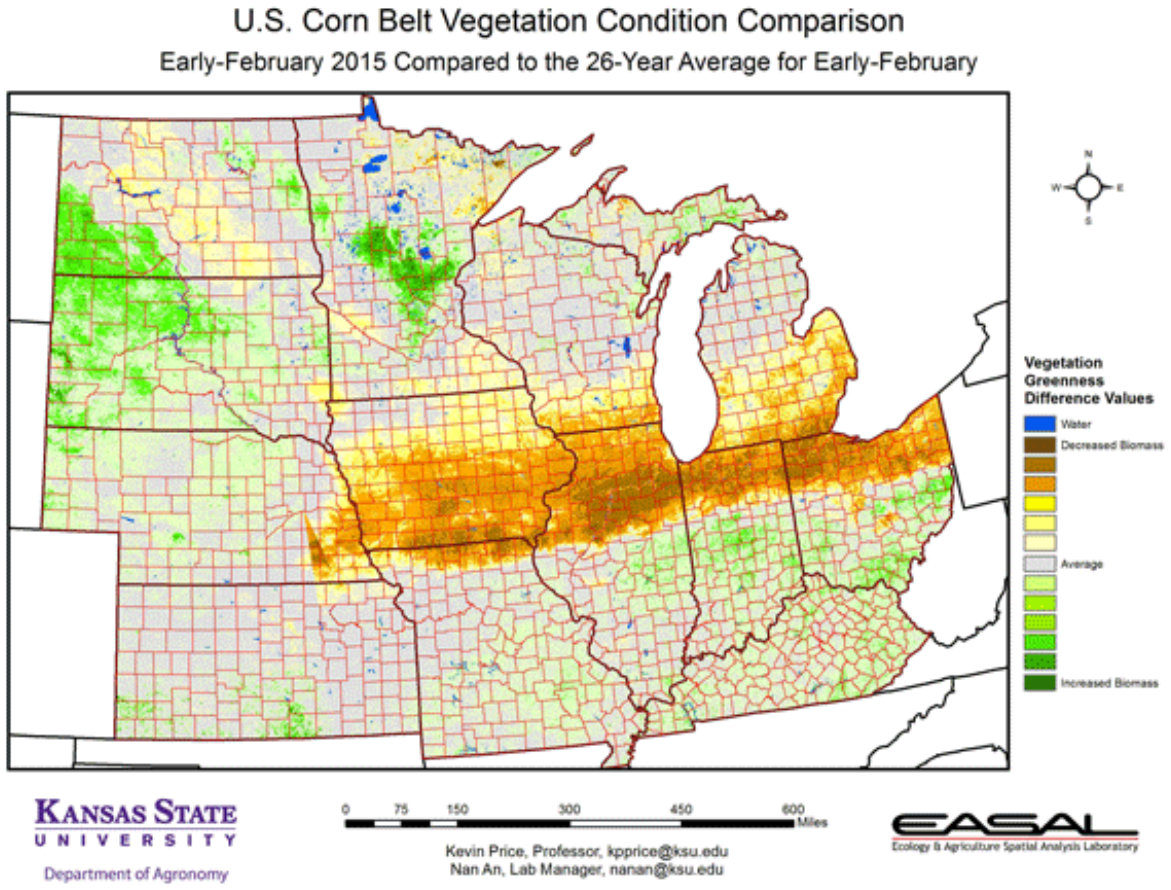

Figure 6. Compared to the 26-year average at this time for the Corn Belt, this year's Vegetation Condition Report for February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that there is an area of below-average NDVI readings from eastern Nebraska across southern Iowa and into northern Ohio. This corresponds with the areas of greatest snow cover.

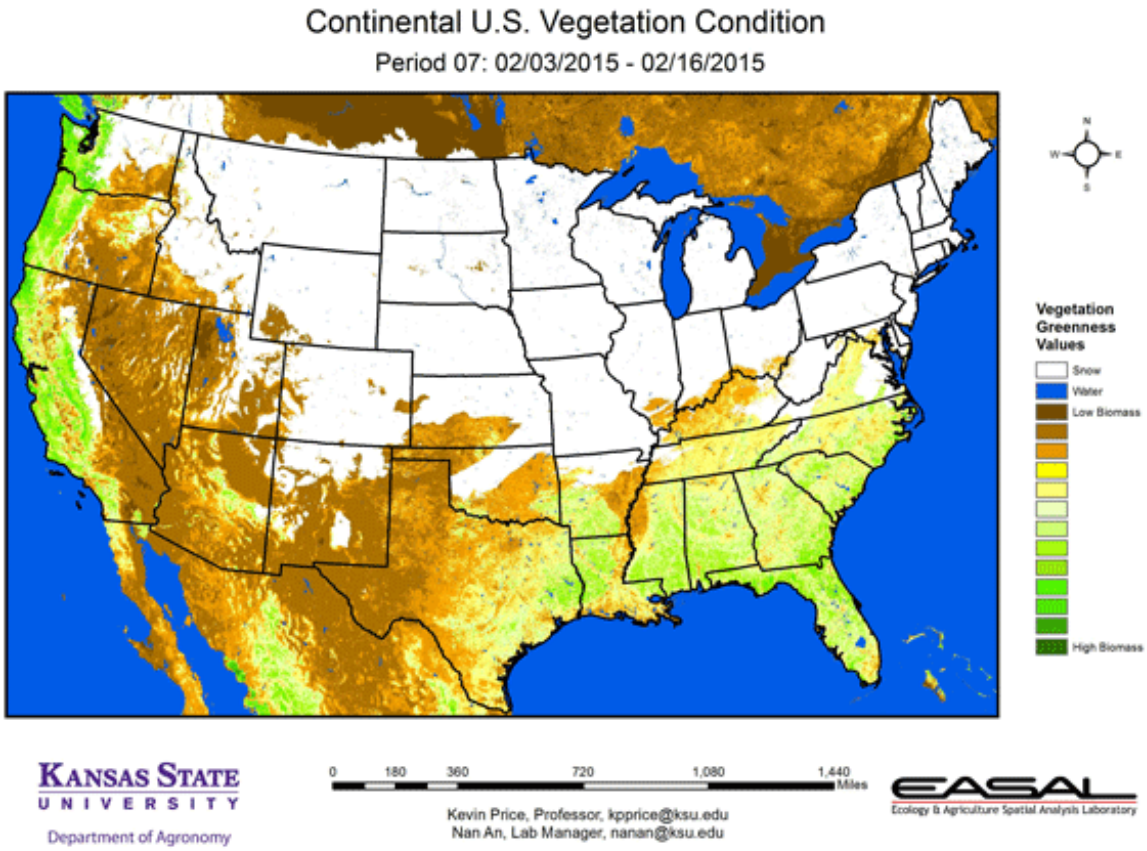

Figure 7. The Vegetation Condition Report for the U.S. for February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that light snow cover continues to be a problem in the West. Snow water equivalents are averaging less than 20 percent along the Cascades.

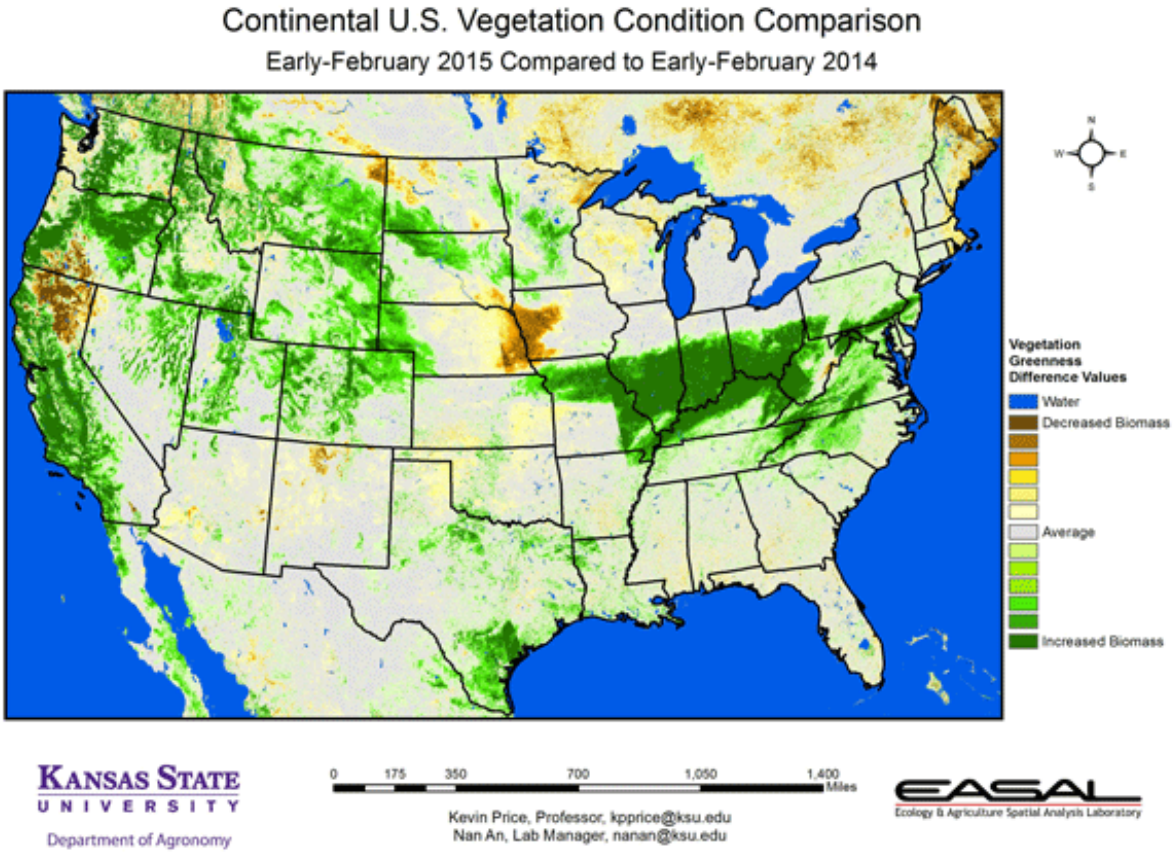

Figure 8. The U.S. comparison to last year at this time for the period February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that higher NDVI readings correspond mostly to areas of lower snow cover this year. South Texas is the exception. Mild temperatures and favorable moisture have resulted in higher NDVI values this year.

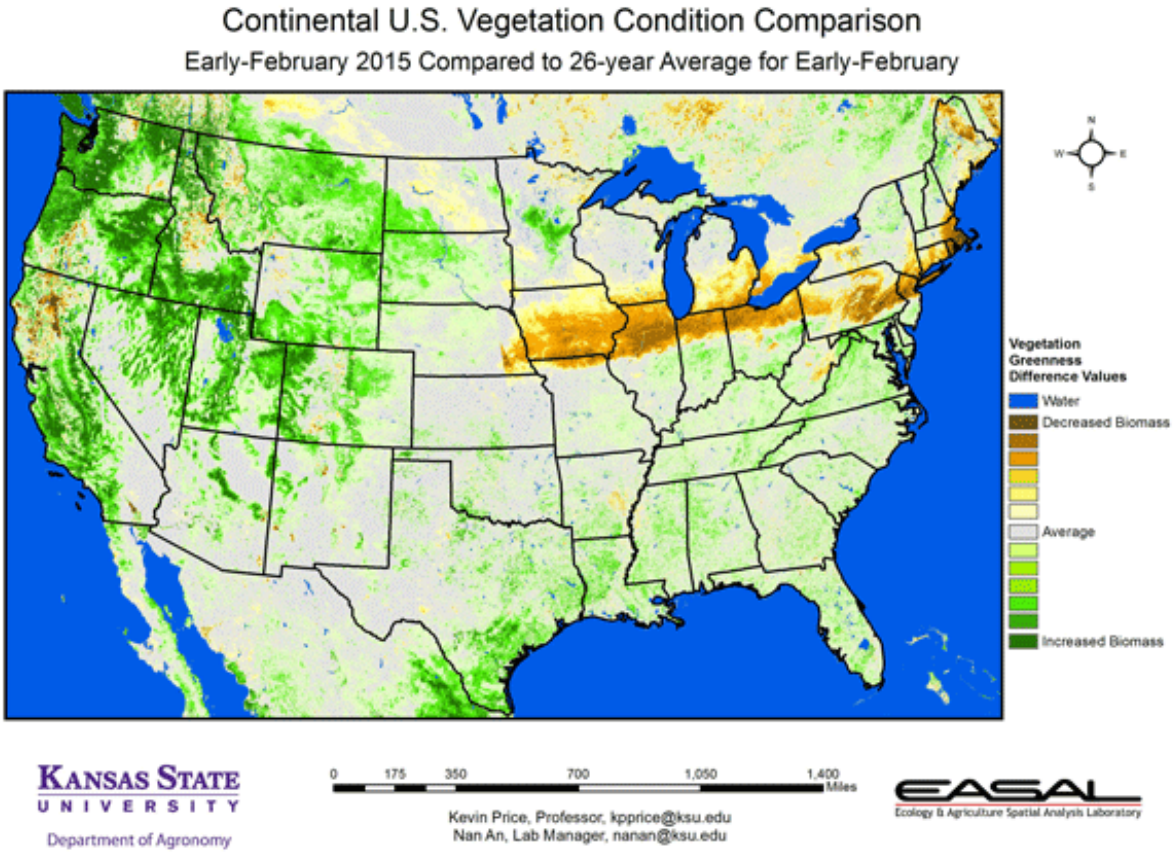

Figure 9. The U.S. comparison to the 26-year average for the period February 3 – 16 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the area of greatest above-average NDVI levels is in the West. This indication of higher photosynthetic activity, coupled with lower snow pack, brings concerns of increasing drought in the coming months.

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