



K-STATE
Research and Extension

Extension Agronomy

eUpdate

04/11/2014

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. Soybean planting dates: Trends and K-State recommendations

Trends in Kansas

In recent years, Kansas producers have shifted soybean planting dates to earlier dates at a rate of about a half-day per year (Fig. 1). After considering the effects of genetic yield potential and the environment, planting date is one of the primary management practices under the farmer's control that can highly influenced final soybean yields.

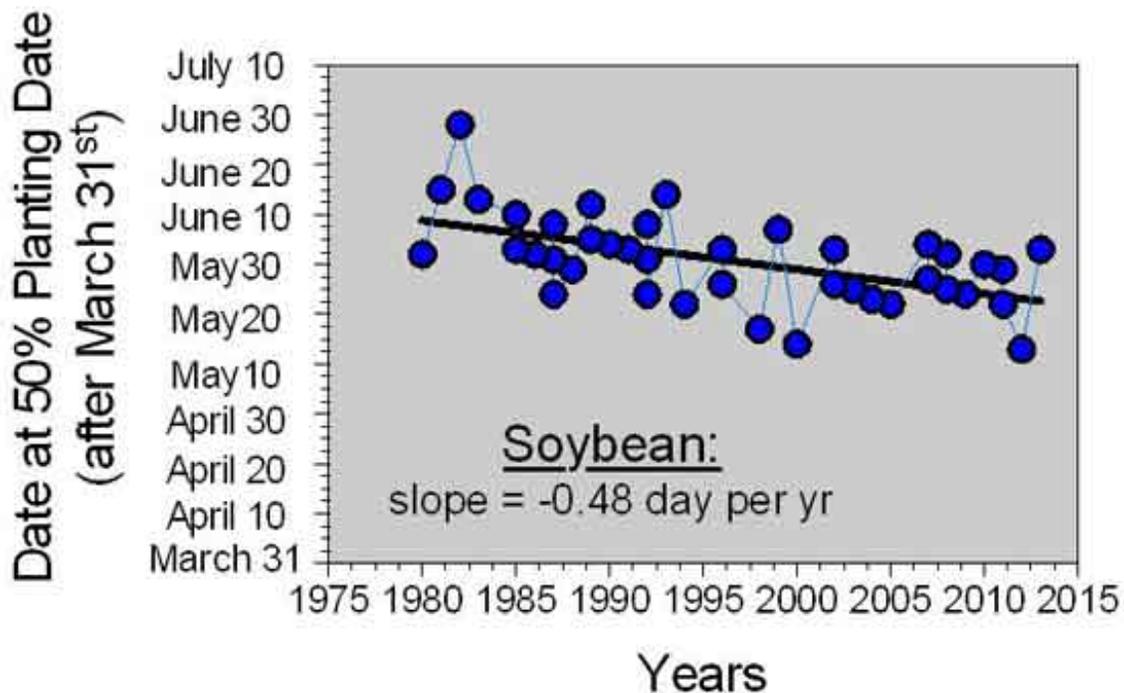


Figure 1. Trend in the date at which 50 percent of planting progress was achieved for soybean planted area in each year from 1980 to 2013 in Kansas. Source: USDA-NASS.

Kansas planting date recommendations

Soybean can be planted over a wide range of planting dates (Fig. 2) under adequate soil moisture conditions, although germination and emergence could be reduced and delayed in cool soils (less than 50 F).



Figure 2. Recommended soybean planting dates across Kansas. Source: K-State Soybean Production Handbook, C449.

K-State research

A summary of research studies comprising information on planting dates and yield benefits for early planting in Kansas is presented Table 1. For general guidelines, the outcomes from the planting date information is evaluated by diverse regions around the state:

Northeast and North Central Kansas:

- For Topeka and Manhattan sites, planting a bit earlier (early May) than normal consistently produced higher yields than other planting dates. Each day that planting was delayed from early May up to mid-late June, yields declined at an overall rate of close to 0.5 bu/acre/day.
- In Belleville (1999, 2001), mid-May planting presented a small yield benefit (4.4 bu/acre) compared to the early May time, with yields declining as the date was delayed beyond mid-late May. Research at Belleville and Scandia in 2009-2010 confirmed this trend, with a clear yield advantage for early May as compared with early-mid June.
- In Powhattan, under lower soybean yield (<30 bu/acre) environments, yields declined with mid-late June planting dates, and was maximized with the early-mid June planting time. Thus, for Powhattan, there was no yield benefit in planting in early May.

Table 1. Soybean planting dates and sites/years across Kansas. The information in this table was calculated as the yield obtained in the early May planting date compared to each planting

date following this date (mid-late May, early-mid June, and mid-late June).

Site, Year	Planting Date		
	Mid-Late May	Early-Mid June	Mid-Late June
	Yield, bu/a, compared to Early May planting		
Powhattan, 2000-02 ¹	1.7	11.4	-9.0
Belleville, 1999, 2001 ¹	4.4	-26.2	-55.2
Topeka, 2000-02 ¹	-4.8	-15.1	-19.2
Ottawa, 1999-2002 ¹	6.6	-0.3	-25.8
Belleville, 2009-10		-6.5	
Scandia, 2009-10		-4.5	
Manhattan, 2010	-7.7	-15.3	-26.1

¹ – No seed treatment in these studies

- East Central: In Ottawa, planting in mid-May resulted in a yield benefit of 6.6 bu/acre compared to planting in early May.
- Southeast: Planting from mid-May to the end of June is recommended for this region (Fig. 2). For Parsons, early-to-mid June and early July planting dates maximized yield production. Those planting dates tend to increase soybean production because they usually allow the beans to avoid heat-drought stress and increase the probability of catching summer rains during the reproductive period.
- South Central: Early planting dates are recommended for this region. For Hutchinson and Wellington, yields were maximized by planting in late April, which is a couple of days before the range of dates recommended in our K-State soybean management guide for planting dates (Fig. 2).
- Western Kansas: Low yields were recorded and planting dates did not affect actual yields.

Conclusions and recommendations

- Ultimately, weather patterns dictate soybean yields, especially under dryland conditions. There is no guarantee that any certain planting date will always work out the best when it comes to soybean yields in Kansas. In fact, the distribution and amount of rainfall and the day/night temperature variations around flowering and during the grain filling periods have large impacts in defining soybean yield potential. Thus, under high risk of drought (sites with low soil moisture at planting, environments more prone to drought) diversifying planting dates may be a good approach to consider.
- When planting early, seed should be treated with a fungicide and insecticide. Varieties with resistance to soybean cyst nematode and sudden death syndrome are advisable to be employed. Do not plant into soils that are too wet, however. Also, do not plant until soil temperatures are at least 50 degrees. If planted into soils cooler than that, seedlings may eventually emerge but will have poor vigor.
- In drier areas of Kansas and on shallow soils, yields have been most consistent when planting soybeans in late May to early June. By planting in that timeframe, soybeans will bloom and fill seed in August and early September, when nights are cooler and the worst of heat and

drought stress is usually over.

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2. Canola conditions in Kansas

The ability of canola to survive a colder-than-normal winter has been put to the test across Kansas this year. Winterkill has been observed from the Oklahoma border to Hutchinson to Belleville.

Winter survival is a complex trait. It is influenced by winter temperatures, soil moisture, variety, and management practices. We most often see winterkill when a warm period is followed by an intense cold snap. This year, however, we have seen unusually cold temperatures for an extended period of time.

Winterkill is dependent on location, variety, and planting date. In some areas, fields planted across the road from each other have shown dramatic variation in survival because of planting date or variety differences. Producers who had to wait on rainfall to plant last fall are likely observing more winterkill than others. Producers who planted into heavy residue without proper in-row residue management are also seeing their crops suffer from winterkill.

After this season, we will have new information to make better variety recommendations based on winter survival. The good news is that we are seeing differential winterkill among varieties at many locations, meaning certain varieties are hurting worse than others and some varieties have survived anywhere they were planted.

Because of the recent fluctuations in temperatures, the canola is in different growth stages across the state. It is flowering in extreme south central Kansas, bolting near Hutchinson, and initiating vegetative re-growth near Belleville. A return to seasonal temperatures and timely rainfall would greatly benefit the crop.



Figure 1. An example of differential winterkill in canola plots in north central Oklahoma, March 27, 2014. Photo taken by Mike Stamm, K-State Research and Extension.



Figure 2. A producer's canola field in vegetative re-growth southwest of Andale, March 26, 2014. Photo taken by Mike Stamm, K-State Research and Extension.



Figure 3. Canola bolting and entering reproductive growth at the K-State Agronomy Redd Foundation Field west of Partridge, April 8, 2014. Flower buds are just visible at the center of the main stem. Photo taken by Mike Stamm, K-State Research and Extension.

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continued to develop in irrigated research plots near San Antonio. He noted that the races of stripe rust present at this location were able to cause disease on Armour and Everest. The races of stripe rust able to overcome the Yr17 resistance present in many varieties with a Jagger pedigree (Fuller, Overley, Jagalene, PostRock) were rare or absent. Ron French, Texas A&M Extension plant pathologist, reports that rust was not present in commercial fields in north central Texas. However, he mentioned that stripe rust and leaf rust were present in commercial wheat fields south of Dallas in Waxahachie (Ellis County) and in Bastrop and Travis counties, which are east of Austin. He reports that Greer and Cedar were being affected by leaf rust. French indicates that temperature and moisture conditions in the Texas High Plains are not conducive for major disease epidemic.

Take home message

The current status of disease and dry weather suggests the risk of severe fungal diseases is currently low in Kansas. Clearly, the crop has a long way to go at this time. The delayed growth and development of the crop may increase the chances that leaf rust could arrive in time to cause damage. Producers should keep an eye on what is happening in Texas and Oklahoma. Locally, producers should be checking their fields for symptoms of disease more frequently as the crop approaches flag leaf emergence.

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4. Newly updated publication comparing wheat fungicides now available

The newly updated K-State publication *Foliar Fungicide Efficacy Ratings for Wheat Disease Management, 2014*, EP130, is now available. This publication focuses on the most widely marketed fungicides in Kansas and examines how effective these products are at controlling the most common leaf diseases. This publication can be found at: <http://www.ksre.ksu.edu/bookstore/pubs/EP130.pdf>

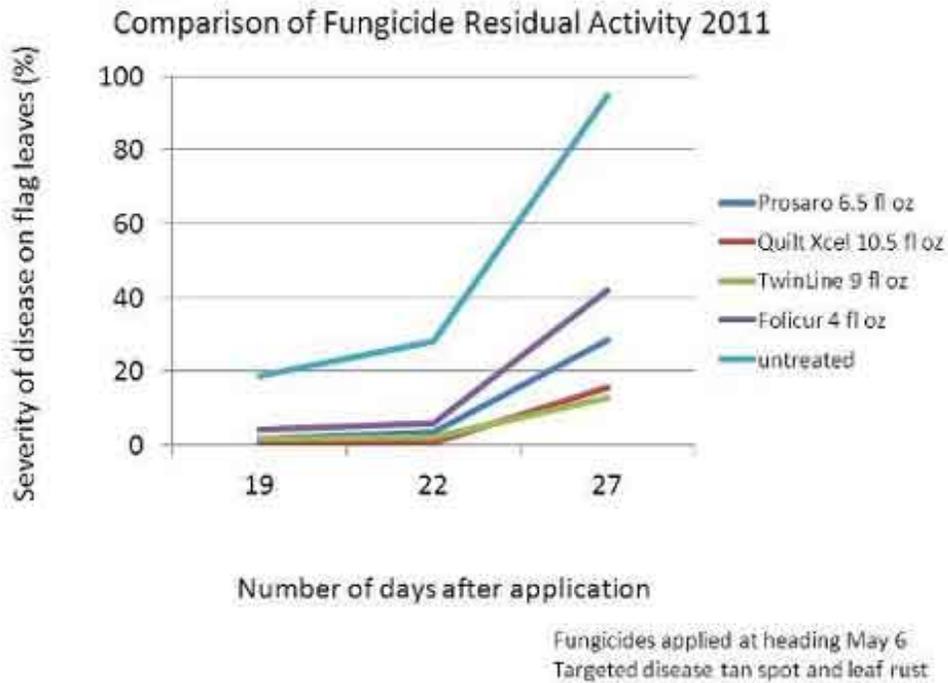
This past year, I have received a lot of questions about the length of residual activity of the different fungicide products and questions about the nature of the fungicidal activity of the products. Below are some thoughts to consider when evaluating the product options.

Residual life of fungicides

The research that I have reviewed indicates that fungicides listed in the publication *Foliar Fungicide Efficacy Ratings for Wheat Disease Management 2014* will generally provide 21 days of solid protection against fungal diseases. This includes products with the active ingredient tebuconazole that is listed in the table as the product Folicur but is also marketed in a number of generic formulations.

The residual life of the fungicide is influenced by many factors, including the rate at which the product is applied, the targeted disease, and the level of disease pressure. Fungicides applied at the full-labeled rate will generally have longer residual life. Fungicides will generally provide longer residual life against rust diseases (often more than 21 days) than leaf spot diseases. Some of the products may provide additional residual life but this extra residual does not always translate into more grain yield.

The chart below is just one example of the type of data that supports the 21-day residual activity for the various fungicide products.



Pre- and post-infection activity

The comparison of fungicide products often includes a discussion of terms like preventive vs. curative activity. These terms have confused a lot of people and I think we should be discussing the fungicides in terms of pre-infection or post-infection activity.

Both the triazole fungicides (Prosaro, Carmaba, Tilt, and Folicur) and the strobilurin fungicides (Headline, Aproach, and Evito) prevent new infections from developing on healthy plants and are best applied when disease is at low levels. The triazole fungicides are generally considered to provide some post-infection activity as well. This means that they can stop the development of fungi during the early stages of the infection process when the fungus begins to invade and colonize the plant. Because the strobilurin fungicides lack this post-infection activity, they are often combined with triazoles in mixed mode of action fungicides such as Quilt Xcel, Stratego YLD, and Twinline.

Summary

The bottom line is that producers have a lot of excellent fungicide options. In my experience, based on all the data I have seen in research trials in Kansas and other states, correctly identifying when fungicides are needed, or not needed, is more important than which product you use.

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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 25-year average. The report is used by individual farmers and ranchers, the commodities market, and political leaders for assessing factors such as production potential and drought impact across their state.

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

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

Kansas Vegetation Condition

Period 14: 03/25/2014 - 04/07/2014

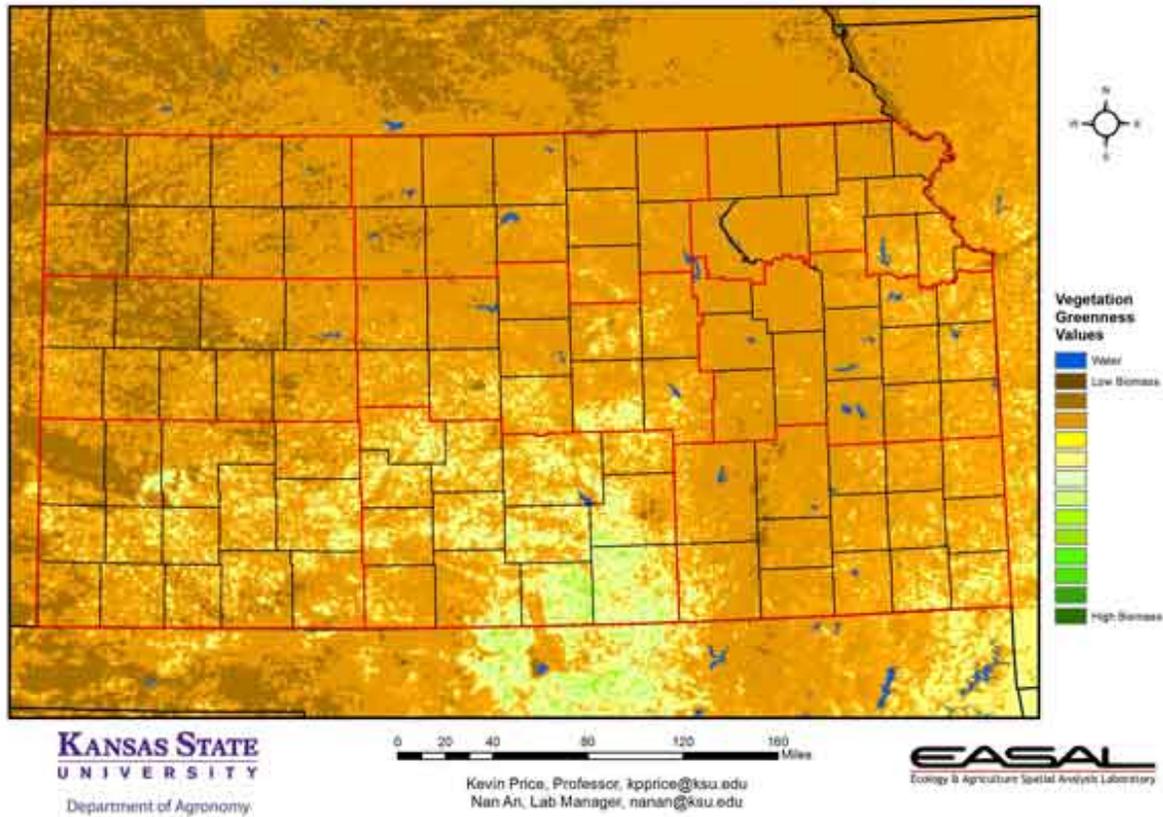


Figure 1. The Vegetation Condition Report for Kansas for March 25 – April 7 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that plant activity continues to be lowest in the Northwestern Division, where temperatures continue on the cool side. Greatest activity is in the South Central Division, where temperatures were warmer, although still below average for the period.

Kansas Vegetation Condition Comparison

Late-Mar/Early-Apr 2014 compared to the Late-Mar/Early-Apr 2013

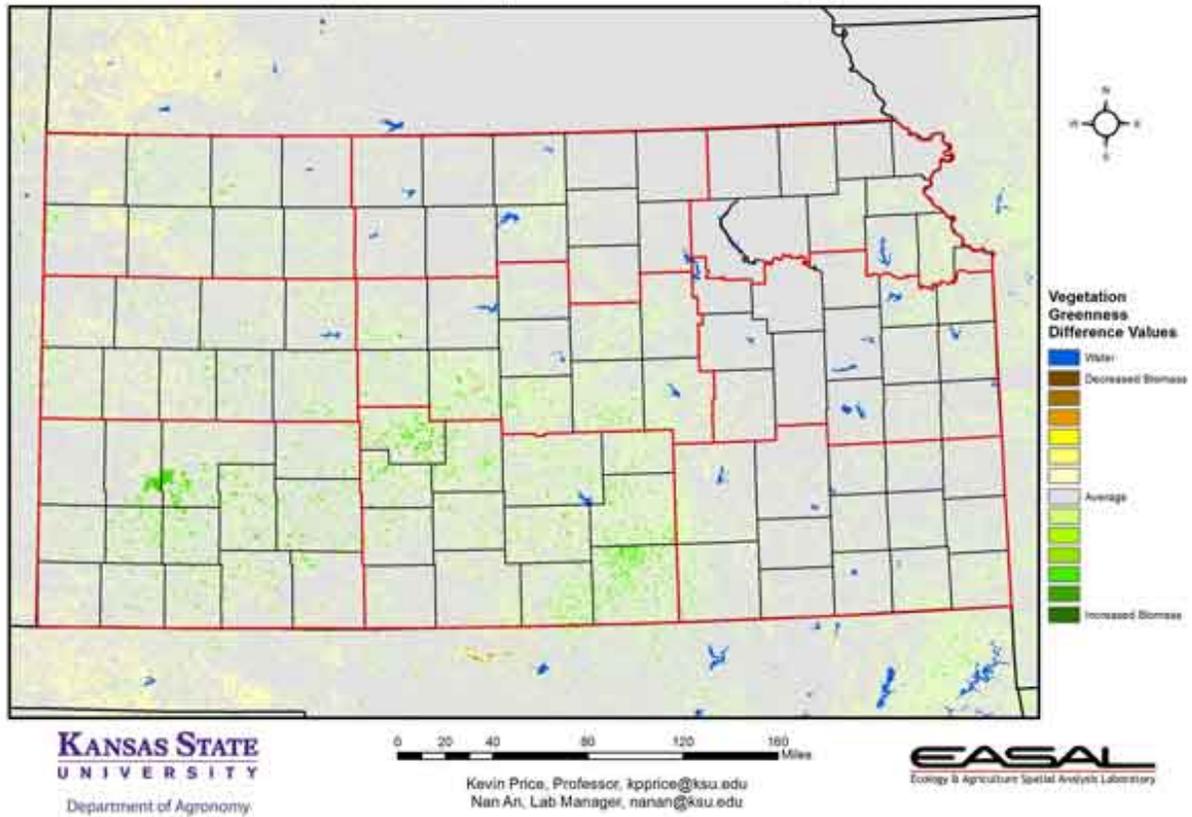


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for March 25 – April 7 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows a very similar level of biomass activity. The biggest increase in activity is in parts of the Southwest and South Central Divisions, where temperatures are slightly warmer than last year.

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Kansas Vegetation Condition Comparison

Late-Mar/Early-Apr 2014 compared to the 25-Year Average for Late-Mar/Early-Apr

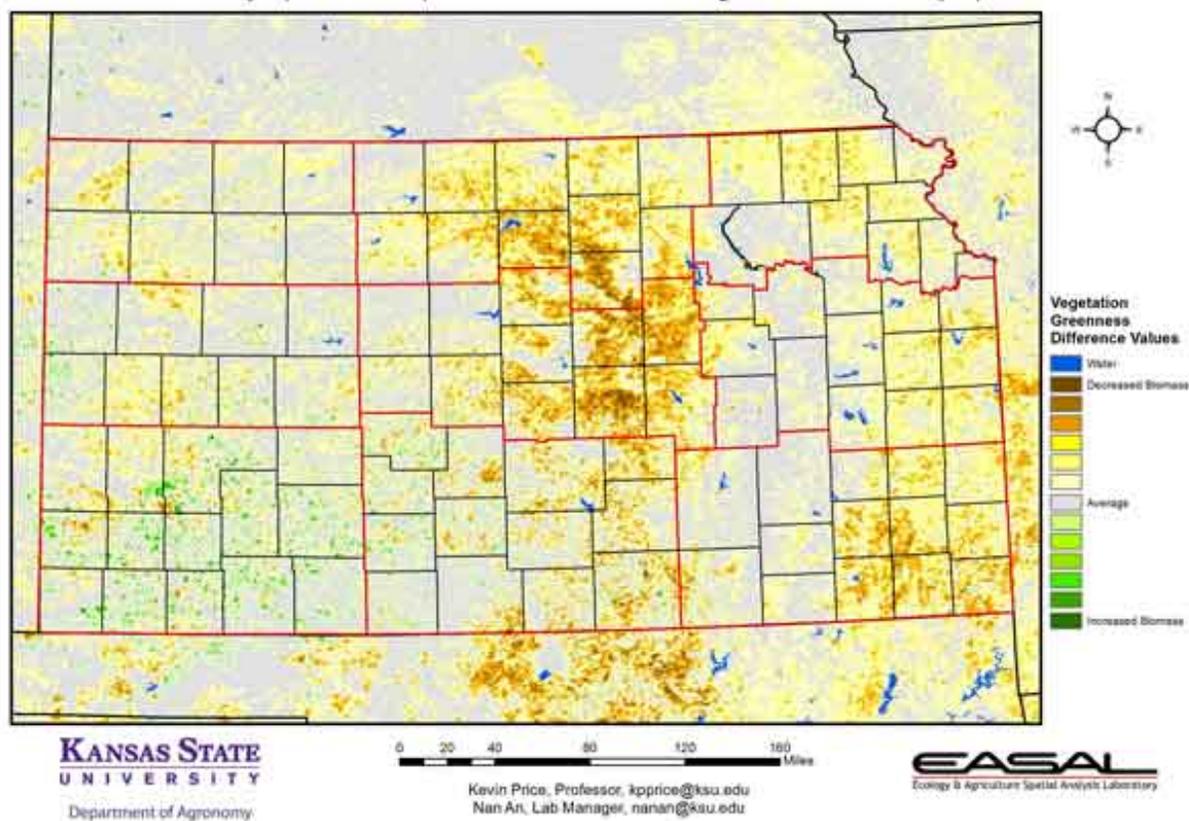


Figure 3. Compared to the 25-year average at this time for Kansas, this year's Vegetation Condition Report for March 25 – April 7 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows the biggest area of below-average activity is in the North Central and Central Divisions. Cooler-than-normal temperatures, lack of moisture in March, and some winterkill of wheat have combined to reduce vegetative activity in the region.

U.S. Corn Belt Vegetation Condition

Period 14: 03/25/2014 - 04/07/2014

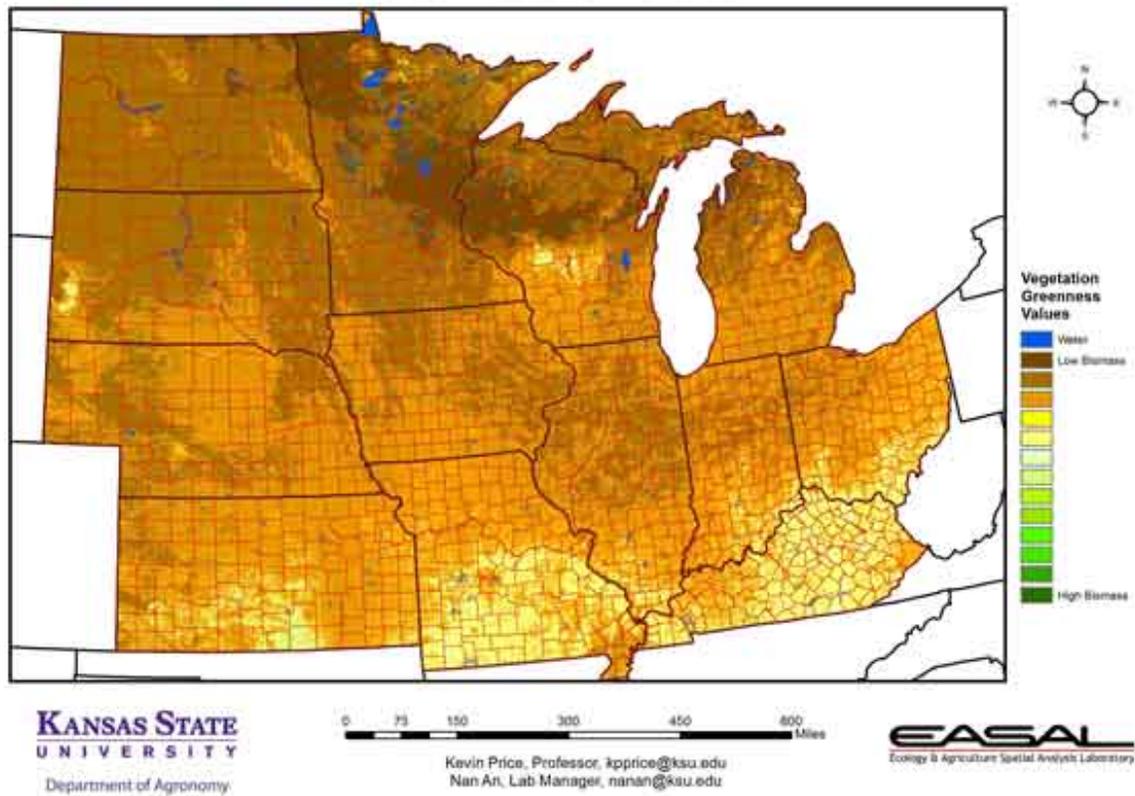


Figure 4. The Vegetation Condition Report for the Corn Belt for March 25 – April 7 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that vegetative production is beginning to develop in the southern portions of the region. Continued snow cover and cold temperatures have delayed photosynthetic activity in the Great Lakes portion of the Corn Belt.

U.S. Corn Belt Vegetation Condition Comparison
Late-Mar/Early-Apr 2014 Compared to Late-Mar/Early-Apr 2013

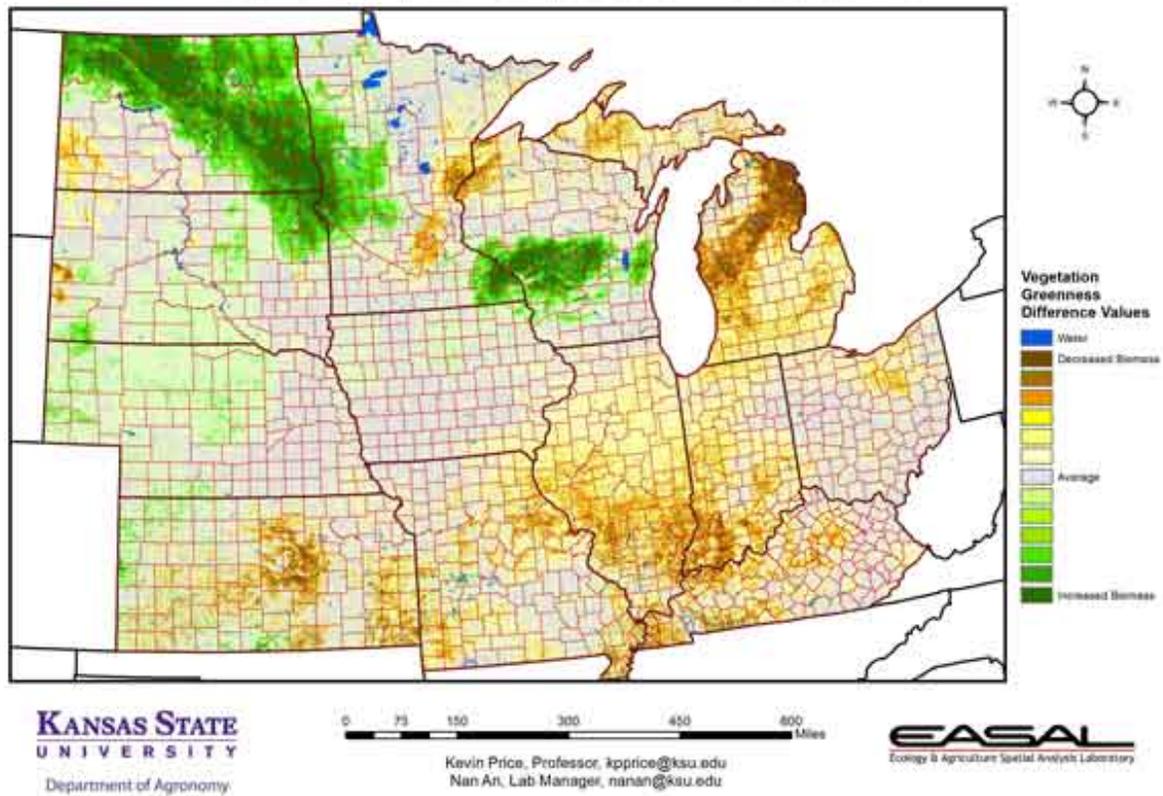


Figure 5. The comparison to last year in the Corn Belt for the period March 25 – April 7 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows the biggest increase in biomass activity is in North Dakota and parts of Central Wisconsin. In contrast to last year, these areas have a relatively lower snow pack.

U.S. Corn Belt Vegetation Condition Comparison
Late-Mar/Early-Apr 2014 Compared to the 25-Year Average for Late-Mar/Early-Apr

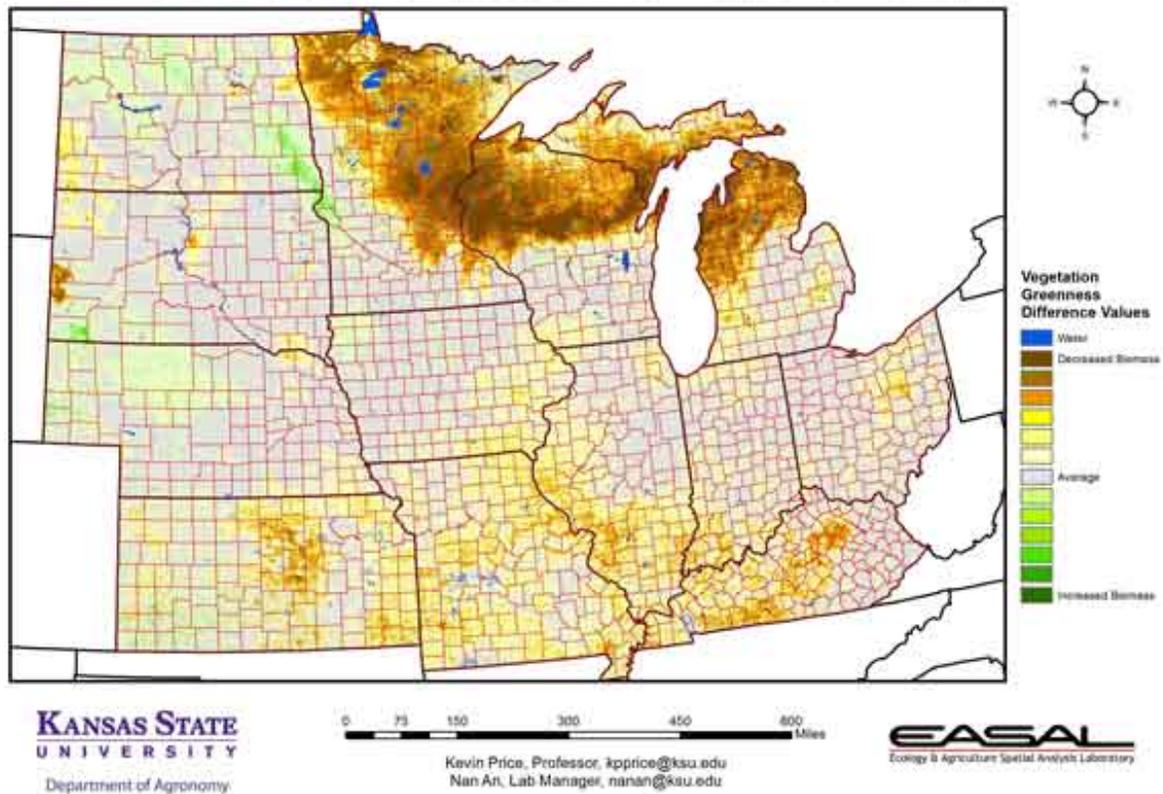


Figure 6. Compared to the 25-year average at this time for the Corn Belt, this year's Vegetation Condition Report for March 25 – April 7 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the northern Great Lakes region has the biggest delay in photosynthetic activity. Lingering winter conditions have delayed greenup in these areas. In parts of central Kansas, the lack of spring moisture combined with winterkill has had a negative impact on wheat that is emerging from dormancy.

Continental U.S. Vegetation Condition

Period 14: 03/25/2014 - 04/07/2014

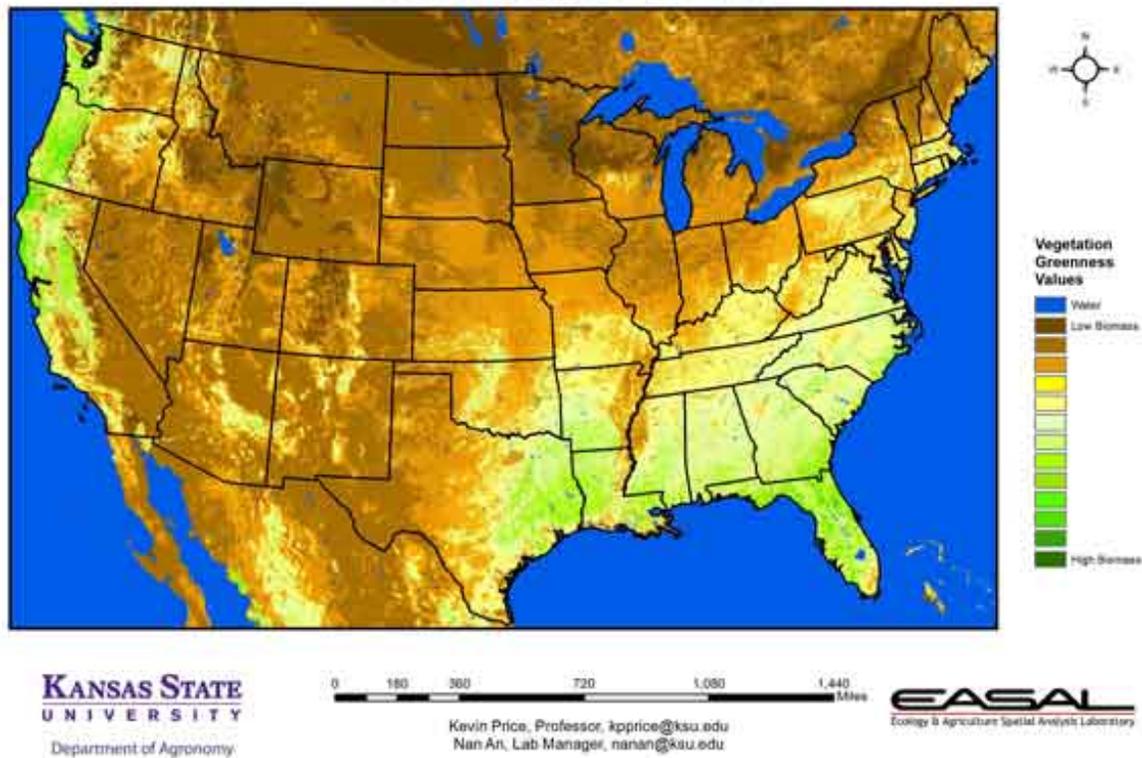


Figure 7. The Vegetation Condition Report for the U.S. for March 25 – April 7 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the area of greatest photosynthetic activity is along the Pacific Northwest into central California and along the Gulf Coast from east Texas to Florida. In the Pacific Northwest, this activity, particularly in the mountains of California, are a concern as it signals very low snow pack and is likely to result in increased drought stress as we move into the summer.

Continental U.S. Vegetation Condition Comparison
Late-Mar/Early-Apr 2014 Compared to Late-Mar/Early-Apr 2013

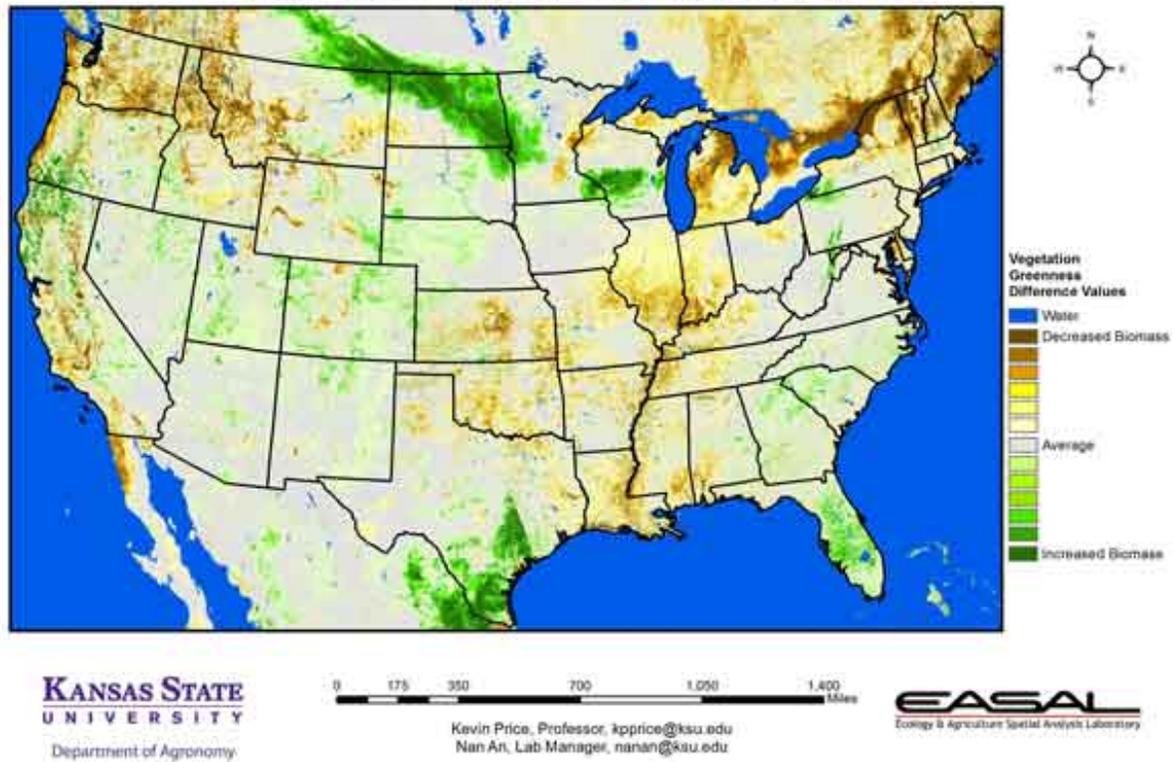


Figure 8. The U.S. comparison to last year at this time for the period March 25 – April 7 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the greatest departure runs from the Northern Plains to Montana and Idaho. In the eastern part of this region, particularly in North Dakota, the lower snow cover has allowed for increased vegetative activity.

Continental U.S. Vegetation Condition Comparison
Late-Mar/Early-Apr 2014 Compared to 25-year Average for Late-Mar/Early-Apr

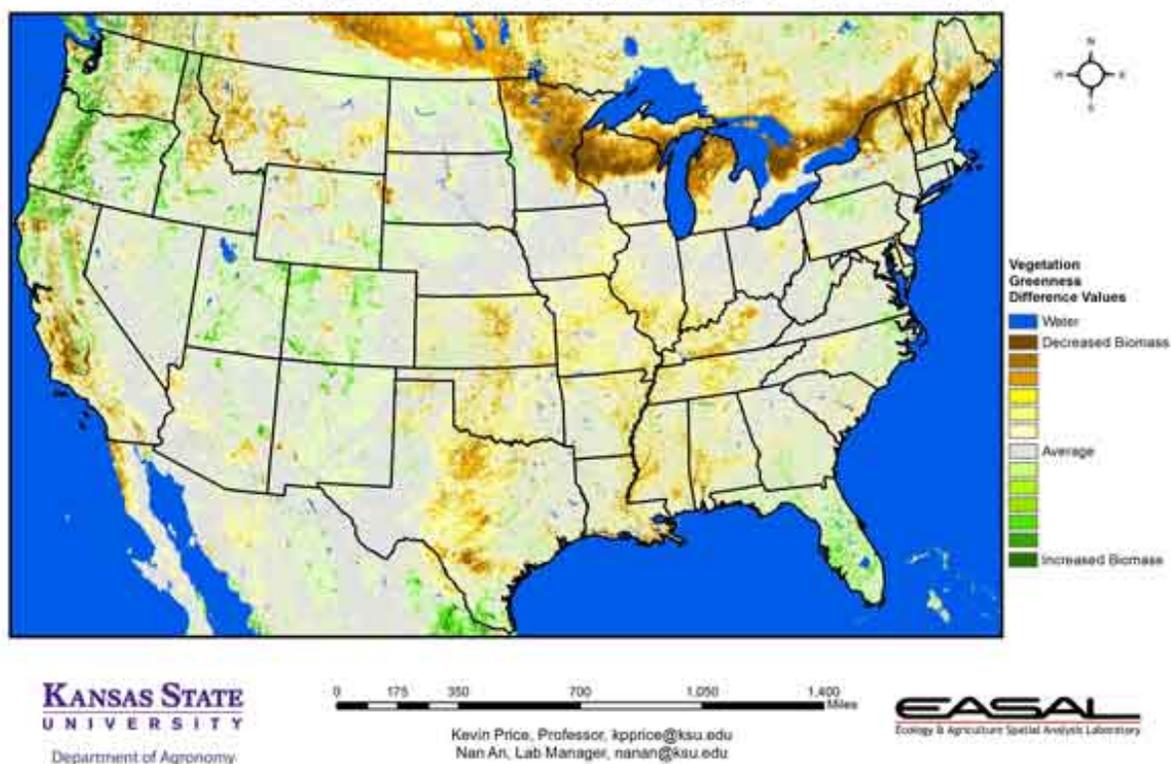


Figure 9. The U.S. comparison to the 25-year average for the period March 25 – April 7 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the slowly retreating snow line has delayed plant activity in the Great Lakes region and, to a lesser degree, in parts of Montana and Idaho. From central Kansas to Texas and into parts of California drought conditions have reduced biomass production.

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