



**K-STATE**  
Research and Extension

## **Extension Agronomy**

# eUpdate

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*08/22/2014*

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](mailto:swatson@ksu.edu), Jim Shroyer, Crop Production Specialist 785-532-0397 [jshroyer@ksu.edu](mailto:jshroyer@ksu.edu), or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 [cthompso@ksu.edu](mailto:cthompso@ksu.edu).

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## 1. Volunteer wheat control: Protecting the states wheat crop

The wet weather in much of the state in June caused quite a bit of volunteer wheat to emerge and grow rapidly. Any volunteer wheat should be controlled soon to protect the state's 2014/15 wheat crop that will be planted this fall.

Volunteer wheat within a half-mile of a field that will be planted to wheat should be completely dead at least two weeks before wheat planting. This will help control wheat curl mites, Hessian fly, and greenbugs in the fall.

The most important threat from volunteer wheat is the wheat streak mosaic virus complex. These virus diseases cause stunting and yellow streaking on the leaves. In most cases, infection can be traced to a nearby field of volunteer wheat, although there are other hosts, such as corn, millet, and many annual grasses, such as yellow foxtail and prairie cupgrass. Control of volunteer is the main defense against the wheat streak mosaic virus complex.



**Figure 1. Wheat streak mosaic. Photo by Erick DeWolf, K-State Research and Extension.**

Wheat streak mosaic virus is carried from volunteer to newly planted wheat by the wheat curl mite. These tiny, white, cigar-shaped mites are too small to be seen with the naked eye. The curl mite uses the wind to carry it to new hosts and can travel up to half a mile from volunteer wheat. The wheat curl mite is the vector for wheat streak mosaic, the High Plains virus, and triticum mosaic virus. In addition, the mite can cause curling of leaf margins and head trapping.

Hessian flies survive over the summer on wheat stubble. When the adults emerge, they can infest any volunteer wheat that may be present, which will keep the Hessian fly population alive and going through the upcoming crop season. We have found that Hessian flies have an adult emergence “flush” after moisture events all summer and even into November, depending upon temperatures. So it seems it is really more of a continuous potential for infestation, making it even more critical to destroy volunteer in a timely manner. If there is no volunteer around when these adults emerge they will not be able to oviposit on a suitable host plant. If the volunteer is destroyed while the flies are still larvae, this will help to reduce potential problems.

Hessian flies often cause significant damage, especially in the eastern two-thirds of the state. Hessian fly larvae attack young wheat plants near the soil line. Tillers may be stunted and later may lodge. In heavy infestations, the whole stand may be lost.

Volunteer wheat is a host of barley yellow dwarf virus, and the greenbugs and bird cherry oat aphids which carry it. So in that respect, destroying volunteer helps reduce the reservoir for the barley yellow dwarf viruses. The aphids have to pick up the BYD virus from an infected host plant first in order to become a carrier that can transmit the disease to wheat. Host plants that can carry the disease include volunteer wheat, corn, and others. However, destroying volunteer will have little effect on aphid populations in the fall and spring since the aphids migrate into the state from southern areas.

Russian wheat aphids may also live over the summer on volunteer wheat. While this insect has wings and can be wind borne for hundreds of miles, the vast majority of fall infestations in Kansas appear to originate from nearby infested volunteer.

A number of other pests are also associated with the presence of volunteer wheat. An example in western Kansas is the Banks grass mite. During some years, infestations become established during late summer and early fall on volunteer wheat. Later, as the quality of the volunteer deteriorates, mites move from the volunteer into adjacent fields of planted wheat or other small grains. Occasionally mites will survive the winter and continue to spread into the planted wheat following greenup in the spring.

A concern in the eastern part of the state is the chinch bug. Occasionally, adult bugs will fly from maturing sorghum fields in late summer to nearby fields where volunteer wheat is growing. Where infested volunteer is allowed to grow right up until seedbed preparation just prior to planting, early planted continuous wheat is likely to become infested. Similarly, volunteer that is allowed to grow through the fall and into the following spring may also serve as an attractive chinch bug host.

Another reason to control volunteer is that volunteer and other weeds use up large amounts of soil moisture. When water storage is important, such as in summer fallow, volunteer must be destroyed.

Destroying volunteer after the new wheat emerges is too late. Producers should leave enough time to have a second chance if control is incomplete. Tillage and herbicides are the two options available for volunteer control.

Tillage usually works best when plants are small and conditions are relatively dry. Herbicide options depend on cropping systems and rotations. Glyphosate can be used to control emerged volunteer wheat and other weeds during the fallow period in any cropping system. However, it has no residual activity and will not control later germinating volunteer wheat or weeds.

If glyphosate is used too close to planting time, volunteer may stay green long enough to transmit diseases and insects to the new crop. It may take as long as one week following glyphosate application before the wheat will die, so that needs to be considered when timing the application to break the bridge for insects and diseases. The optimum time to treat with glyphosate is when most of the volunteer has emerged and is healthy and actively growing. Glyphosate can effectively control volunteer wheat that has tillered.

Atrazine is a relatively inexpensive treatment for volunteer wheat control that can be applied anytime in the summer or fall, if rotating to sorghum or corn. In the September to October time period, using atrazine plus crop oil alone can often control small volunteer wheat that has not yet tillered, as well as later-emerging volunteer wheat and other weeds.

If the volunteer has tillered, most of the roots will have grown deep enough to be out of the reach of atrazine. This is when it helps to add glyphosate to the atrazine plus crop oil. Glyphosate is translocated from the leaf tissue throughout the plant. The combination of glyphosate and atrazine will provide a good combination of burndown and residual control on both volunteer that has tillered and later-emerging volunteer. Atrazine rates need to be adjusted to soil type and pH, and may not be appropriate for all areas.

In summary, the most important reasons to control volunteer wheat are:

- Wheat curl mite/wheat streak mosaic virus
- Hessian fly
- Russian wheat aphid
- Take-all
- Bird cherry oat aphid/greenbug/barley yellow dwarf virus
- Banks grass mite
- Chinch bug
- Reduces moisture loss

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## 2. Kansas Mesonet in Agronomy Department: Near real-time weather data for Kansas

The Kansas Mesonet ([mesonet.ksu.edu](http://mesonet.ksu.edu)), available on Agronomy's Weather Data Library (WDL) web site, is a network of automated weather stations. The Kansas Mesonet consists of 47 active stations across the Kansas (Figure 1). At each station, the weather variables are monitored by a set of instruments mostly mounted on either a 10-meter-tall tower or a 3-meter-tall tower, or sometimes both (Figure 2). Some soil sensors and rain gauges are located near the tower. The Kansas Mesonet provides nearly real-time (5 minute refresh rate), high-quality, and reliable agriculture-related weather observations in Kansas.

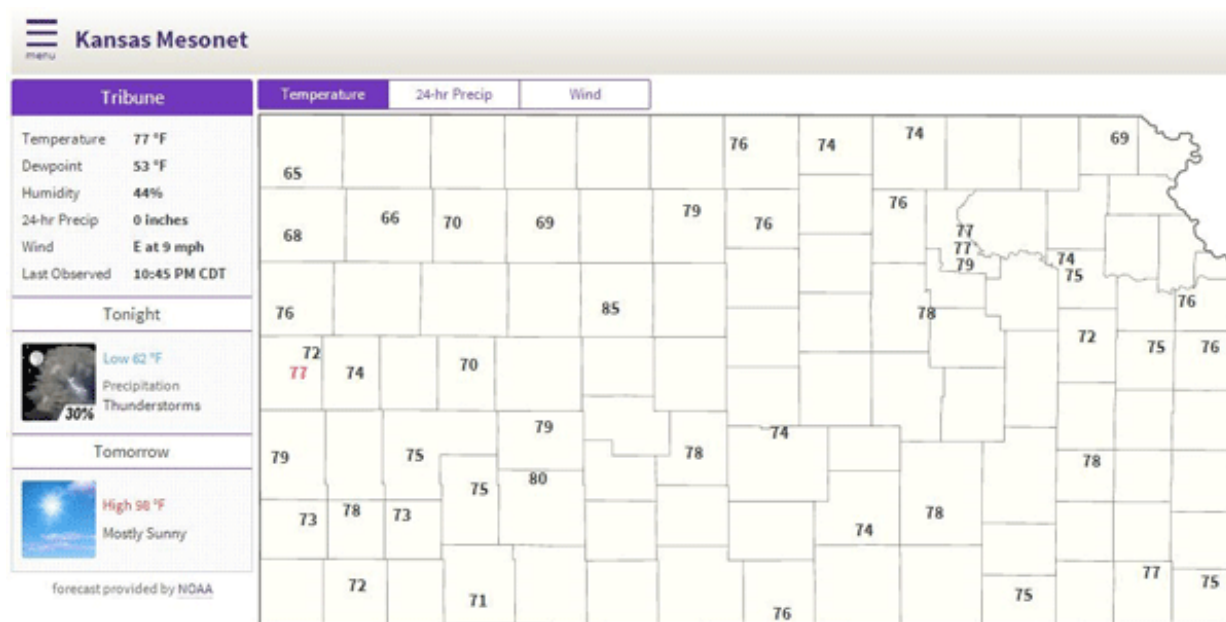


Figure 1. Current Kansas Mesonet website at [mesonet.ksu.edu](http://mesonet.ksu.edu)





Kansas State University Department of Agronomy  
2004 Throckmorton Plant Sciences Center | Manhattan, KS 66506  
[www.agronomy.ksu.edu](http://www.agronomy.ksu.edu) | [www.facebook.com/KState.Agron](https://www.facebook.com/KState.Agron) | [www.twitter.com/KStateAgron](https://www.twitter.com/KStateAgron)

**Figure 2. A typical Kansas Mesonet station located near Colby. Both 10-meter-tower and 3-meter-tower are included at this site. Photo by K-State Research and Extension.**

Every station reports a set of observations including air temperature, air relative humidity, precipitation, wind speed and wind direction, solar radiation, barometric pressure, and soil moisture contents and soil temperatures (Fig. 3). All these observation data can be obtained through our website shown in Fig. 1.

Three types of online data are available: historical weather data, weekly summary data, and yesterday's weather data. When the specific site and time period are provided, these data can be readily downloaded through the website. For the longer observations (e.g., more than 1 year) for specific sites, the Kansas Mesonet staff can provide that information to the user individually based upon the request. The contact email is [kansas-wdl@ksu.edu](mailto:kansas-wdl@ksu.edu).

Variables	Heights	Sampling Rates	Accuracies
Temperature	1.5m	5 sec	+/- 0.2 to +/-0.4 °C
Relative Humidity	1.5m	5 sec	+/-2 to +/-3%
Solar Radiation	2 to 3m	5 sec	+/-5% on the daily basis
Barometric Pressure*	Inside enclosure	1 min	+/-0.3 to +/-1 mb
Rainfall	standard	5 sec	+/-1% to -5%
Soil Temperatures	10cm and more	5 sec	+/- 0.2 to +/-0.4 C
Soil moistures*	20, 40, 60cm	1 min	+/-3% VWC m <sup>3</sup> /m <sup>3</sup>
Wind Speed and Direction	2.5m and 10m*	5 sec	+/- 1% of reading and +/- 3°

**Fig. 3. Detailed weather variables monitored at each station. The \* indicates that this variable might not be included at a specific site.**

In addition, the WDL provides climate information dating back to the 1850's, which primarily includes daily maximum and minimum temperatures, precipitation, and snowfall depth across Kansas.

We also participate the Community, Collaborative, Rain, Hail and Snow Network, and maintain the Kansas data for this network. This is a network of community members who have their own gauges and report their observations online. This becomes particularly helpful in the winter with snowfall measurements.

Those in the department working on the Mesonet project include Dr. Xiaomao Lin, state



climatologist; Mary Knapp, state assistant climatologist; Chip Redmond, WDL manager; Brian Petersen, WDL web programmer; and Fred Caldwell, weather monitoring equipment specialist.

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### 3. Some basic points on using anhydrous ammonia for wheat production

As producers start thinking about anhydrous application for wheat this fall, there are a few basic points which they should keep in mind, especially regarding safety. Ammonia is a hazardous material and safety should be the highest priority of the operator.

#### **Safety practices**

- Always have your personal safety equipment available and use it. The word “anhydrous” means without water. Ammonia reacts rapidly with the water in tissue if it comes into contact with skin, eyes, and mucous membranes. It is extremely important that when working with ammonia farmers and fertilizer plant employees use all the appropriate personal safety equipment. As a minimum this includes wearing tight-fitting chemical goggles to protect your eyes, chemical-resistant gloves, and a long sleeve shirt or jacket. People working with ammonia should also carry a plastic eyewash bottle of water with them at all times, in addition to having access to safety water tanks on both the ammonia tank and the tractor/applicator.
- Check over the equipment carefully before starting work. Make sure all hoses are in good shape, and valves and break-away disconnects are in good operating condition.

#### **Application methods and ammonia retention**

When using ammonia as an N source, there are a number of reactions which come into play that will affect ammonia retention in soils, N response and efficiency. These include chemical reactions, physical factors relating to soil conditions, and how deeply the ammonia is applied. One important question many years in Kansas concerns dry soils. Will a dry soil be able to hold anhydrous ammonia or will some or most of the ammonia be lost shortly after application?

- Chemical reactions of ammonia in soil. Ammonia ( $\text{NH}_3$ ) needs to react with water shortly after application in order to convert into ammonium ( $\text{NH}_4^+$ ), which is the molecule that can adhere to clay and organic matter in the soil. Ammonia is very soluble in water. After it is placed in the soil,  $\text{NH}_3$  reacts with water in the soil to form ammonium-N ( $\text{NH}_4^+$ ), which is retained on the soil cation exchange sites. This process takes a little time – it does not occur immediately upon contact with the soil. The main controlling factors in the conversion of  $\text{NH}_3$  to ammonium-N are soil temperature, soil moisture, and soil pH. The higher the soil temperature and the wetter the soil, the more rapid the conversion occurs. If the ammonia does not react with water, it will remain as a gas that could escape from the soil. Also, equilibrium between  $\text{NH}_3$  and  $\text{NH}_4^+$  is affected by soil pH. More  $\text{NH}_3$  will remain unconverted in the soil longer at higher application rates and at higher soil pH levels.
- Physical factors that influence sealing and ammonia loss. Dry soils may be cloddy, with large air spaces where the soil has cracked. Getting the soil sealed properly above the injection slot can also be a problem in dry soils. This can allow the gas to physically escape into the air before it has a chance to be converted into ammonium. On the other hand wet soils tend to smear, leaving application channels open to the surface and providing a pathway for ammonia loss also. It is very important to make sure at the time of application that the slot created by the shank is sealed shut and that there is adequate soil moisture present for the  $\text{NH}_3$  to be retained in the soil. If the soil is too dry to retain  $\text{NH}_3$ , or is not sealed well, gaseous  $\text{NH}_3$  can escape into the atmosphere and be lost for crop use. At today's high N prices, this can quickly become very expensive.

- Importance of application depth. The deeper the ammonia is applied, the more likely it is that the ammonia will have moisture to react with, and the easier the sealing. Anhydrous ammonia can be applied to dry soils, as long as the ammonia is applied deep enough to get it in some moisture and the soil is well sealed above the injection slot. If the soil is either dry and cloddy, or too wet, there may be considerable losses of ammonia within just a few days of application if the soil is not well sealed above the injection slot and/or the injection point is too shallow. A recent study near Topeka found little or no direct ammonia loss in the week after application when ammonia was applied at 5- or 9-inch depths under good soil conditions. However, under wet conditions, losses as high as 15% of the applied N were seen with shallow application.

Application rate and shank spacing will also have a strong influence on sealing and potential loss. Lower N rates and application with narrow spacings reduces the concentration of N at any one delivery point and reduces the risk of loss.

The human nose is a very good ammonia detector. Producers should be able to tell if anhydrous is escaping from the soil during application or if the ammonia isn't being applied deeply enough. If ammonia can be smelled, the producer should either change the equipment setup to get better sealing or deeper injection, or wait until the soil has better moisture conditions.

### **Shank spacing**

What about shank spacing for wheat? A number of studies have been done looking at the spacing of anhydrous application on wheat yields. The results have been somewhat erratic, but in general, yields tend to be reduced at shank spacings wider than 20 inches. The differences seem to be greater at higher yield levels, on sandy soils, and at lower N rates.

Recent studies in Kansas showed a 5% yield difference between 15- and 30-inch spacings over 5 experiments. One general observation is that a wavy appearance will be common in fields fertilized with ammonia, with plants near or directly over an ammonia band being taller, and those between bands shorter. At low N rates, this will likely lead to a small yield reduction. But at rates more than 100 pounds of N, yields will likely not be impacted, especially on silt loam or heavier soils.

### **Summary**

In short, ammonia is an excellent N source for wheat, but producers need to consider some basic issues to be able to apply it safely and to gain good efficiency.

- Make sure the application equipment is in good condition, that water tanks on the nurse tanks and the applicator/tractor are full of clean water, and that they use their personal safety equipment and have a personal eye wash bottle with them at all times.
- Apply anhydrous ammonia at the proper depth to ensure good sealing.
- Where possible use a narrow shank spacing, less than 20 inches.
- Use covering disks behind the knives or sealing wings ("beaver tails") on the knives of conventional applicators.
- Apply anhydrous ammonia at least 1 to 2 weeks before planting. This waiting period should be even longer if soils are dry.

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#### 4. Late-season purpling in corn

Issues with purple coloration of corn plants sometimes occur about mid-August or later. It is perhaps more common for purple coloration in corn to occur early in the season, often a result of a phosphorus deficiency or cold temperature stress.

When purple coloration occurs later in the season on the leaf, stem, husk, silk, or anther tissues, this can be related to the production and accumulation of a pigment called anthocyanin. Anthocyanin is derived from another pigment, “anthocyanidin,” that is comprised of a sugar-like molecule. The accumulation of anthocyanin occurs when the plant is not capable of translocating sugars to different plant organs.

*Source (leaves): Sink (grains) Imbalance Issue*

The late-season purple coloration phenomenon takes place when photosynthetically active tissues of the plants are acting as sources of sugars, while the sinks (ears – when present) are not utilizing sugars as fast as the sugars are being produced. When this happens, the flow of sugars within the plants is disrupted and the sugars can accumulate in various areas of the plants, causing an unusual purple coloration. This could be a result of several different factors:

*Environment-by-genetic interaction:* There may be a specific hybrid response to environmental conditions, such as cool nights followed by sunny days, causing a buildup of sugars. The presence or absence of the genes associated with the production of anthocyanin is specific to certain hybrids.

*Restricted root development:* Restrictions in root growth, which may be due to several different factors -- such as drought stress, saturated soils, soil compaction, cool temperatures, herbicide injury, insect feeding, or shallow planting -- may cause a reduced demand for sugars, thus increasing purple coloration. This situation is more likely to occur early in the vegetative stages.

*Poor ear development or barren plants:* Ear development may be impaired by any number of factors (biotic and abiotic stresses), causing a disruption in the demand for sugars from photosynthesis. Barren plants, when ears are not present, tend to show this purpling in leaves and stem organs. This can occur at almost any reproductive stage of the crop season.

Regardless of the specific factor that causes anthocyanin accumulation, the production of the purple coloration is associated with some kind of restriction in the utilization of carbohydrates produced during photosynthesis.

Purple coloration can occur on the stems or leaves (Figure 1). Purple coloration can also be seen in the reproductive structures such as husk, silk, and anther tissues (Figure 2).

With corn now nearing maturation, the crop is advancing into the grain-fill period and reaching the end of its life cycle. As this process continues, water and nitrogen uptake by the roots will be decreasing until the end of the season. The root system has a very high demand for sugars at its peak of activity. As it decreases in physiological activity, sugars may accumulate in the lower sections of the stem (Figures 3 and 4).

Purple coloration problems have also been observed in situations with multiple ears, without indication of problems in ear size or grain set, and in plants located near field borders with sufficient

soil-air resources. This indicates that the plant has an imbalance between sugar accumulation and allocation (Figure 4).



**Figure 1. Purple color on stem and leaves of corn plants during the vegetative period (five-leaf stage), due to buildup of anthocyanin. Photo by Ignacio Ciampitti, K-State Research and Extension.**



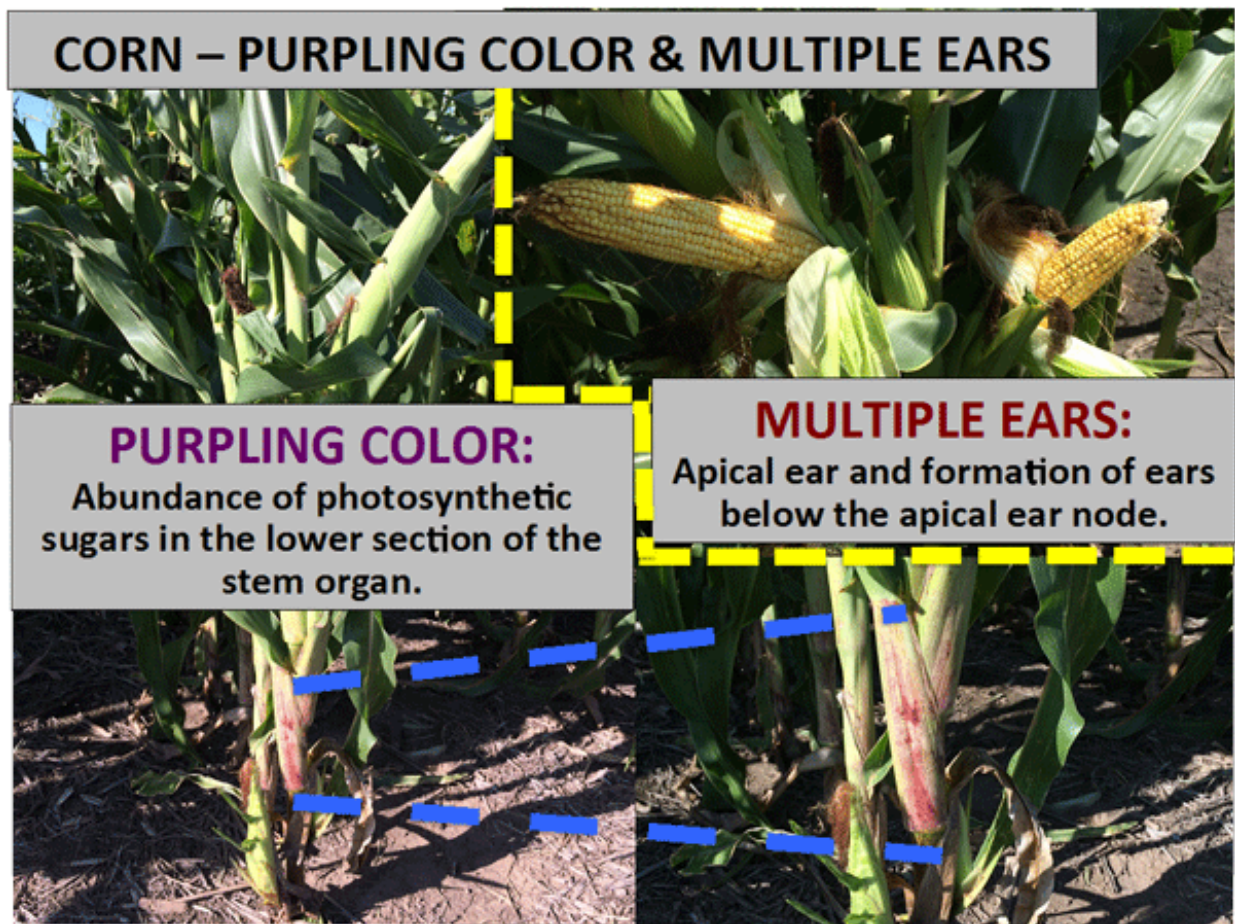
**Figure 2. Purple color on leaves for corn plants during the reproductive period. Photo by Ignacio Ciampitti, K-State Research and Extension.**





**Figure 3. Darker purple color on the lower stem section of corn plants, due to buildup of anthocyanin. Photo by Doug Shoup, K-State Research and Extension.**





**Figure 4. Purple color on the lower section of the stem on plants around milk stage (R3, reproductive stage) with the presence of multiple ears. Photo by Ignacio Ciampitti, K-State Research and Extension.**

In summary, purpling is an indication of a surplus of photosynthetic sugars, generally promoted by imbalance between source:sink (e.g., poor kernel set). Either way, purple coloration is often a warning sign, and fields should be scouted for these signs.

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## 5. Cereal rye cover crops prior to corn: Are there issues?

Cereal rye (*Secale cereale*) is a popular cover crop in eastern Kansas, either alone or in a mixture, and either before corn or soybean. It has many benefits, including high biomass production which produces abundant aboveground biomass. It is great at scavenging excess N, preventing soil erosion, suppressing weeds, and over a period of years, can increase soil organic matter. Cereal rye can be mixed with a legume, such as crimson clover or hairy vetch, and brassicas, such as radishes or turnips.

The number one question related to cereal rye and corn is the subject of growth suppression. Rye is an excellent weed suppressor, particularly because it is able to outcompete weeds. Small, light-sensitive weeds such as lambsquarters, pigweed, velvetleaf, chickweed, and foxtail are often suppressed by cereal rye, as long as the cereal rye covers at least 90% of the soil surface. (Managing Cover Crops Profitably, 2009, p. 98-105).

Allelopathy is when the release of chemicals from one plant inhibits or even kills other plants, and cereal rye does release allelopathic chemicals as it decomposes. It is thought that allelopathy affects small seeds more than large seeds, and since many weed seeds are located very near the soil surface, particularly in no-till, cereal rye has the greatest impact on small-seeded weeds, either due to allelopathy or competition.

So what about allelopathic or competition effects from cereal rye on corn? In a recent on-farm study conducted by Practical Farmers of Iowa, "Farmers reported that in 36 of 40 trials, properly managed cover crops had little or no negative effect on corn and soybean yield (and actually increased soybean yield in 4 trials)." One potential reason why there might be less effect of cereal rye on corn than some other species is that corn seeds are larger, and planted deeper, than many weed seeds (Hartzler, 2014).

Best management practices:

Still, to help alleviate any potential concerns about the allelopathic effect cereal rye may have on corn, producers should terminate it 10-14 days before corn planting. Allelopathy is not the only factor to consider when using a cereal rye cover crop prior to corn. The rye can keep soils cooler and wetter than normal when it's time to plant corn -- if the weather has been cool and wet.

Current USDA Risk Management Agency policy is that for parts of eastern Kansas, cash crops may be planted into a living cover crop, as long as the cover crop is terminated within a certain number of days, and before the cash crop emerges (Agronomy eUpdate 436, January 10, 2014). Termination is defined as the day the cover crop is sprayed or rolled. If the farmer sprays the cover crop and there is a herbicide failure of any kind, then it is the farmer's responsibility to go in and fix that problem.

For more information, see:

Practical Farmers of Iowa. <http://practicalfarmers.org/farmer-knowledge/research-reports/2014/winter-cereal-rye-cover-crop-effect-cash-crop-yield/>

*Managing Cover Crops Profitably*, 3<sup>rd</sup> edition. Can be downloaded for free at: <http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition>

Cereal Rye Cover Crops, Allelopathy and Corn, by Bob Hartzler, Iowa State University. 4-23-2014.  
<http://www.extension.iastate.edu/CropNews/2014/0423hartzler.htm>

Changes in cover crop termination guidelines by USDA. eUpdate 436. 1-10-2014.  
[https://webapp.agron.ksu.edu/agr\\_social/eu\\_article.throck?article\\_id=129](https://webapp.agron.ksu.edu/agr_social/eu_article.throck?article_id=129)

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## 6. Start scouting now for sorghum headworms

It is important to monitor flowering/heading sorghum fields for corn earworm, also known as sorghum headworm. Flowering sorghum heads sampled on August 21 indicated approximately 25% of the heads were infested with various sizes of larvae.

Although larvae of this moth prefer corn, they sometimes infest sorghum heads. The head capsule is light brown, and the body color varies from pink to green to brown with light and dark stripes along the length of the body. Larvae can be 1.5 inches long at maturity.



**Figure 1. Sorghum headworm (corn earworm). Photo by K-State Research and Extension.**

Infestations are more common in southern Kansas, and sorghum is vulnerable to infestation from bloom through milk stages. Larvae are active from August to October. One to two larvae per head can result in approximately 5 to 10 percent yield loss.

Producers should begin scouting fields now and consider treatment where infestations average five or more worms per head during the early post-bloom period. The decision to treat should balance the expected yield and crop value against treatment cost and the amount of damage that can be prevented. The average size of larvae at detection is a key consideration, because less will be gained by treating older, larger larvae.

Please refer to the most recent version of the [Sorghum Insect Management Guide](#) for specific control recommendations.



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## 7. South Central Kansas Experiment Field Fall Field Day, August 26

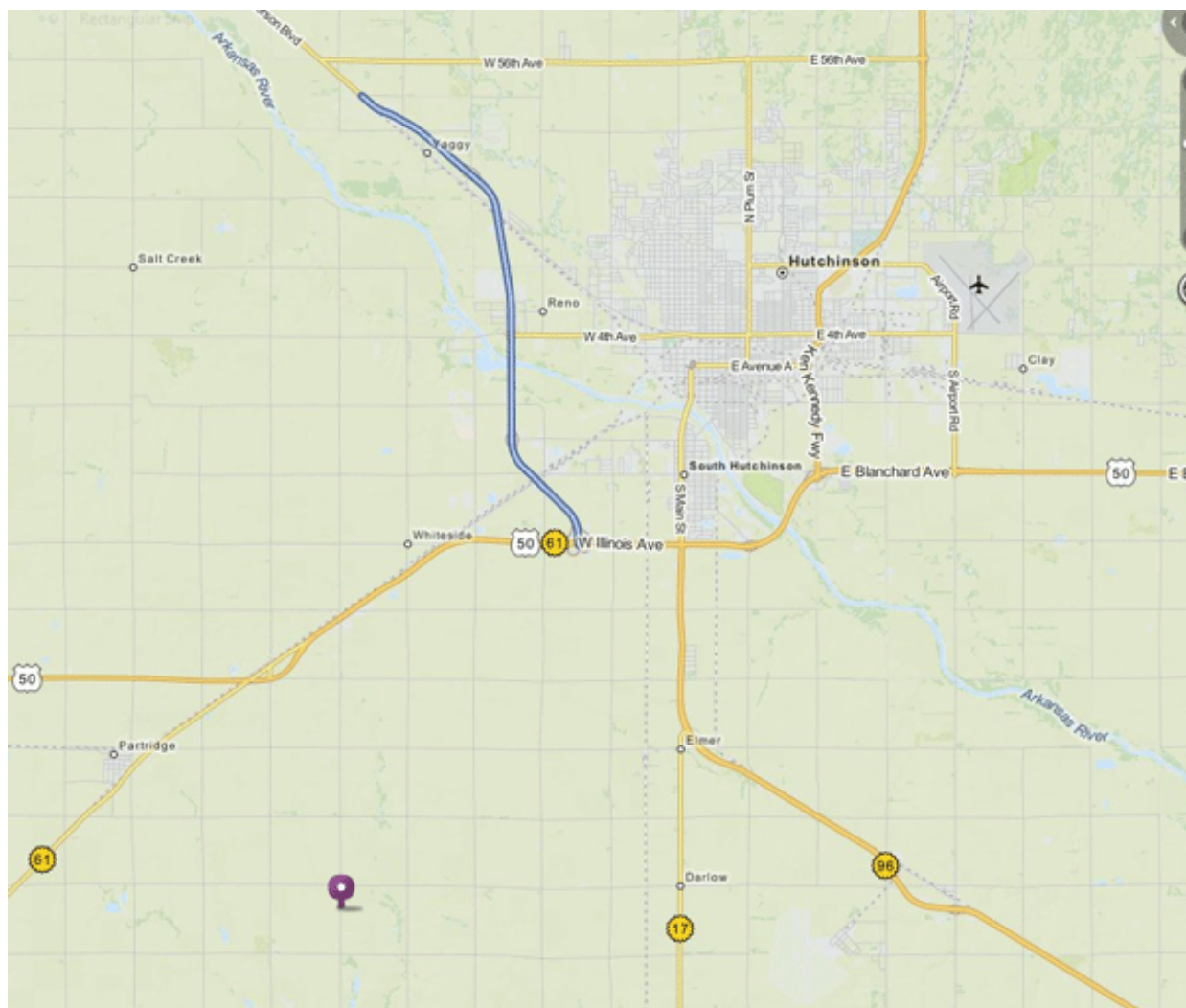
The South Central Kansas Experiment Field near Hutchinson will host its fall field day on Tuesday, August 26. The field day begins at 5 p.m. with registration. A complimentary meal will be served after the presentations, courtesy of Cotton, Inc. and Kansas Cotton. Pre-registration to obtain a head count for the meal is requested by Monday, August 25 by contacting Gary Cramer at 620-662-9021 or [gcramer@ksu.edu](mailto:gcramer@ksu.edu).

Field day topics and presenters include:

- Cotton Prospects in South Central Kansas – Rex Friesen, consultant, Southern Kansas Cotton Growers
- Drought-Tolerant Corn – Stu Duncan, K-State Research and Extension
- Grain Sorghum Hybrids for South Central Kansas – TBA
- Review of Canola Performance in 2014 – Mike Stamm, K-State Research and Extension
- Review of Wheat Variety Performance in 2014 – TBA
- Herbicide Programs for Inzen-Z Grain Sorghum – Curtis Thompson, K-State Research and Extension
- Tissue Testing for Chloride in Sorghum, Christie Edwards, Ph.D. Graduate Student, K-State Department of Agronomy
- Evaluating the Effect of Weed Management on Nutrient Status in Grain Sorghum Using Sensors – Ashley Lawrence, Undergraduate Student, K-State Department of Agronomy
- Kansas Water Vision: Water Rights and Water Use Efficiency – Greg Foley and Lane Letourneau, Kansas Department of Agriculture

The field day will be held at field headquarters, 10702 S. Dean Road, Hutchinson, 3 miles east of Partridge on West Trail West Road, then 2½ mile south on South Dean Road.

More information is available by contacting Gary Cramer, Agronomist-in-Charge, South Central Kansas Experiment Field at 620-662-9021 or [gcramer@ksu.edu](mailto:gcramer@ksu.edu).



**Figure 1. Directions to South Central Kansas Experiment Field headquarters.**

## 8. K-State Agricultural Research Center-Hays Fall Field Day, August 27

An alternative crop for fallow and a tiny pest that may be a new threat to sorghum are among the topics to be covered at the [Kansas State University Agricultural Research Center's](#) Fall Field Day in Hays on Wednesday, Aug. 27. The center is located at 1232 204<sup>th</sup> Ave.

Registration and refreshments start at 9 a.m., followed by the program and field tours beginning at 9:30 a.m. Lunch and two presentations indoors will close out the day.

Field tour and auditorium presentation topics include:

- Camelina sativa as an alternative fallow replacement – Augustine Obour, soil scientist, ARC-Hays
- Glyphosate-resistant weeds: Update and management – Phil Stahlman, weed scientist, ARC-Hays
- New sorghum parents and current commercial hybrids – Ramasamy Perumal, sorghum breeder, ARC-Hays
- Potential for cool-season grass legume mixtures – Augustine Obour
- Grain yields after 40 years of no-till – Augustine Obour
- Sugarcane aphid, a new threat to grain sorghum (auditorium) – J.P. Michaud, entomologist, ARC-Hays
- Grain market and farm profitability outlook 2014-2015 (auditorium) – Dan O'Brien, agricultural economist, K-State Northwest Research-Extension Center-Colby

More information is available by calling 785-625-3425.



## 9. Southwest Research-Extension Center Cropping Systems Field Day, Aug. 28

Farmers, ranchers and anyone interested in how crops are grown in southwest Kansas can hear the latest in key research findings at the Southwest Research-Extension Center Field Day 2014 on Aug. 28 in Garden City.

The day starts with registration at 8 a.m. and the program beginning at 9:15 a.m. at 4500 E. Mary St. in Garden City. The event features tours and seminars by K-State Research and Extension specialists and researchers, agricultural product displays and a sponsored, complimentary lunch.

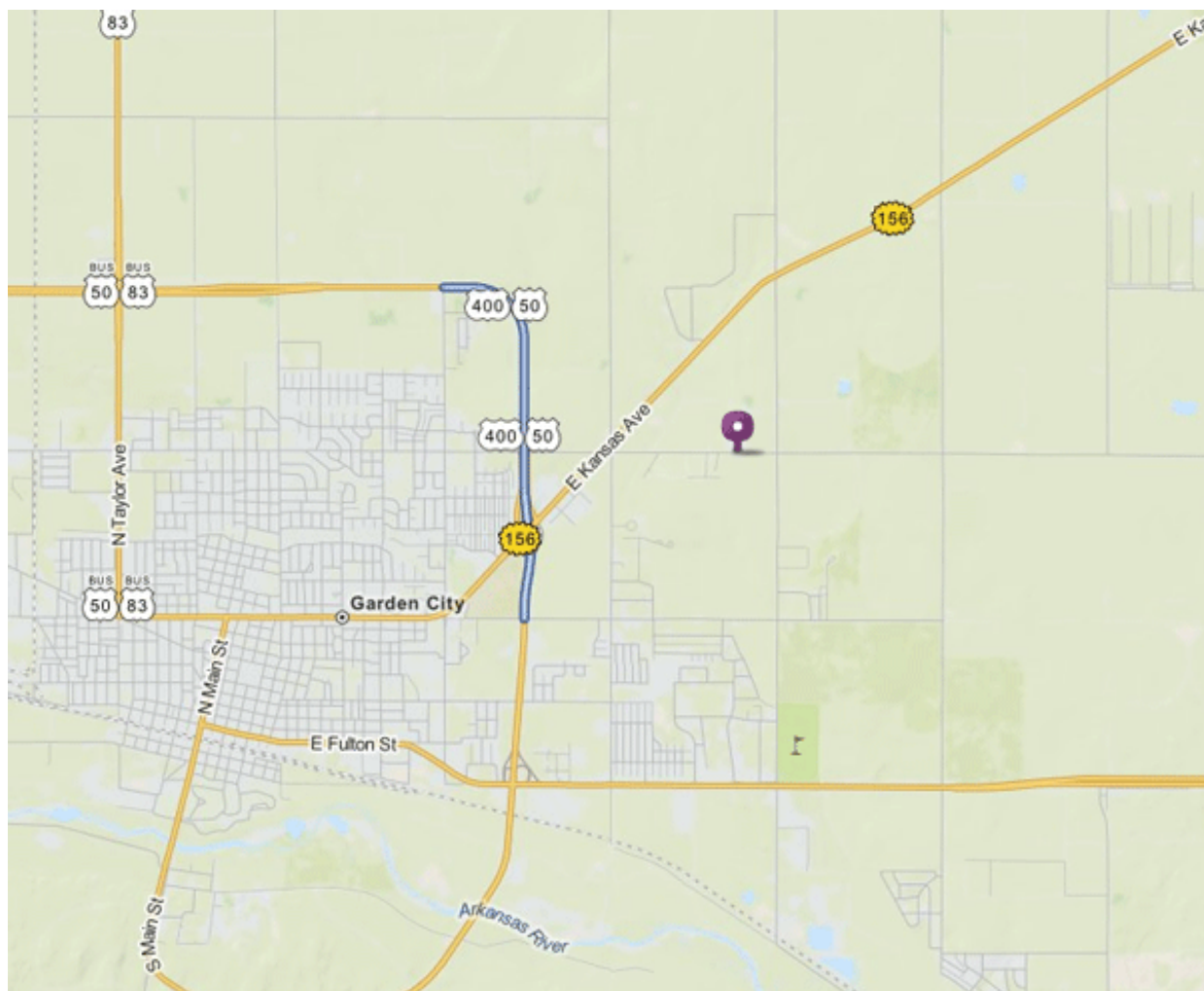
Topics of the two field tours, plus seminars include:

- Comparisons of Weed Control in Irrigated Corn with 60 Herbicide Tank Mixes
- Herbicide-Resistant Inzen Sorghum for Postemergence Grass and Broadleaf Weed Control
- Weed Control with 37 Herbicide Tank-Mix Options for Irrigated Sorghum
- Corn Insect Caterpillars and Bt Hybrids: Controls, Efficiency, and Cross Pollination
- Effects of Drought-Tolerant Corn on Spider Mites
- Integrating Summer Annual Forage into Cropping Systems
- Advances in Remote-Sensing of Crop Water Stress for Irrigation Management
- Using Crop Models for Assessing Limited Irrigation Management Strategies
- Revisiting Soil Moisture Sensors
- Fireflies in Western Kansas

The field tours will be repeated so all attendees have an opportunity to participate in both.

Continuing education credits are available for commercial pesticide applicators.

More information is available by calling 620-276-8286.



**Figure 1. Map to Southwest Research-Extension Center in Garden City**

## 10. Comparative Vegetation Condition Report: August 5 - 18

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>

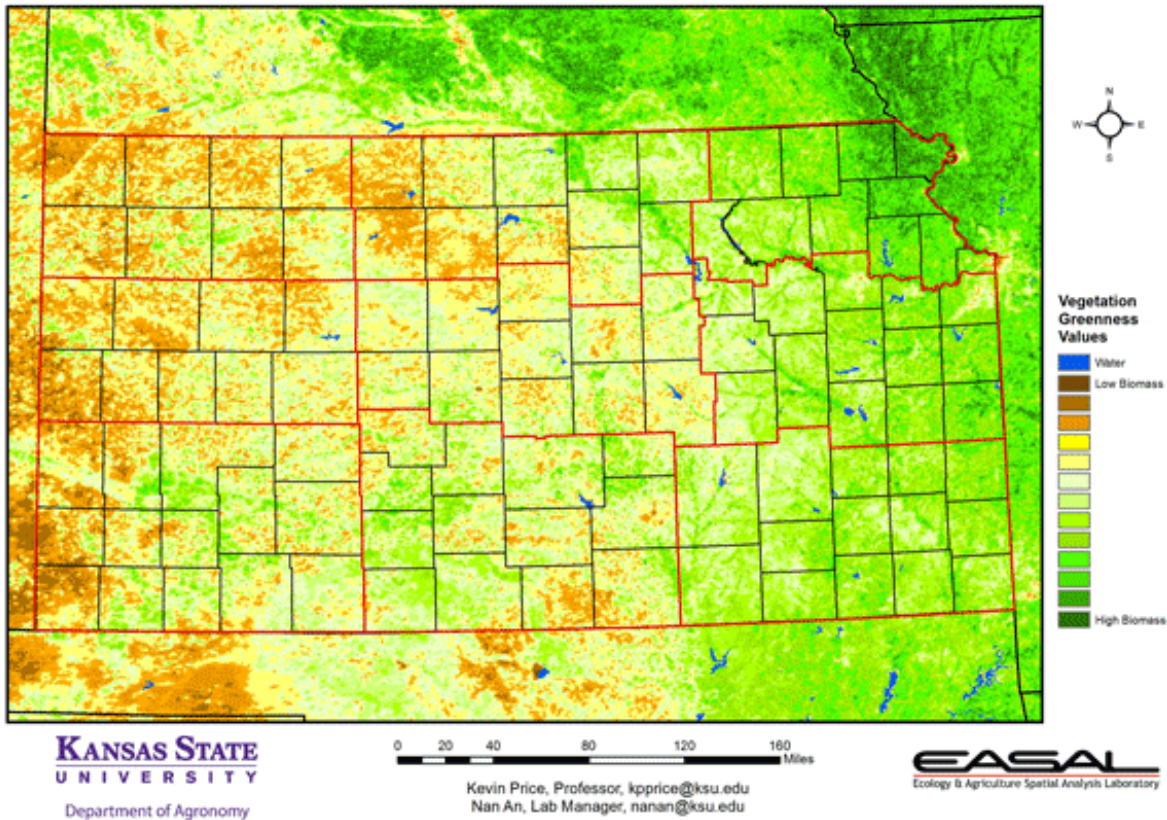
The objective of these reports is to provide users with a means of assessing the relative condition of crops and grassland. The maps can be used to assess current plant growth rates, as well as comparisons to the previous year and relative to the 25-year average. The report is used by individual farmers 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](mailto: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 33: 08/05/2014 - 08/18/2014



**Figure 1. The Vegetation Condition Report for Kansas for August 5 – 18 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that NDVI values continue to be highest in extreme northeast Kansas, and along the Republican River Valley. Some moderate NDVI values are visible in parts of southwest and south central Kansas, where recent rainfalls have been greater.**

Kansas State University Department of Agronomy

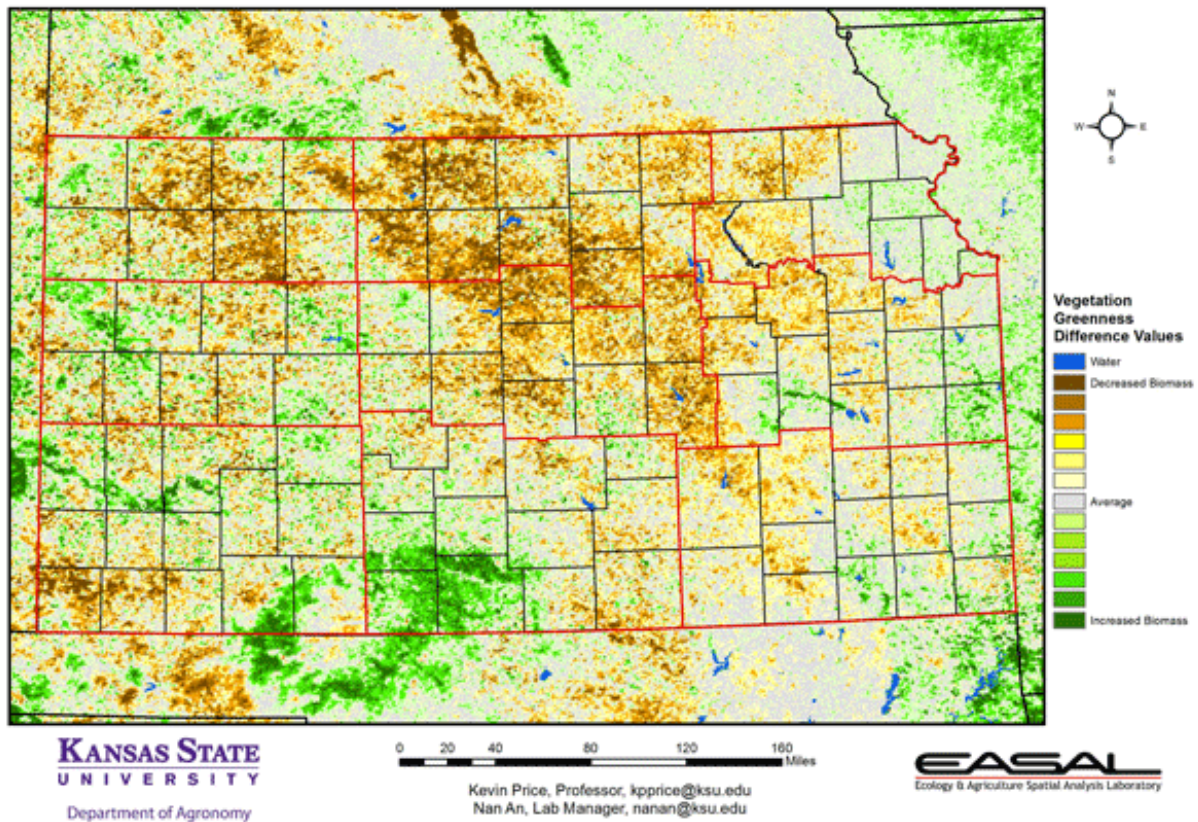
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## Kansas Vegetation Condition Comparison

Mid-August 2014 compared to the Mid-August 2013



**Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for August 5 – 18 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the greatest difference is in north central Kansas. While rainfall in the region has been slightly higher this year, the distribution was much more favorable last year.**

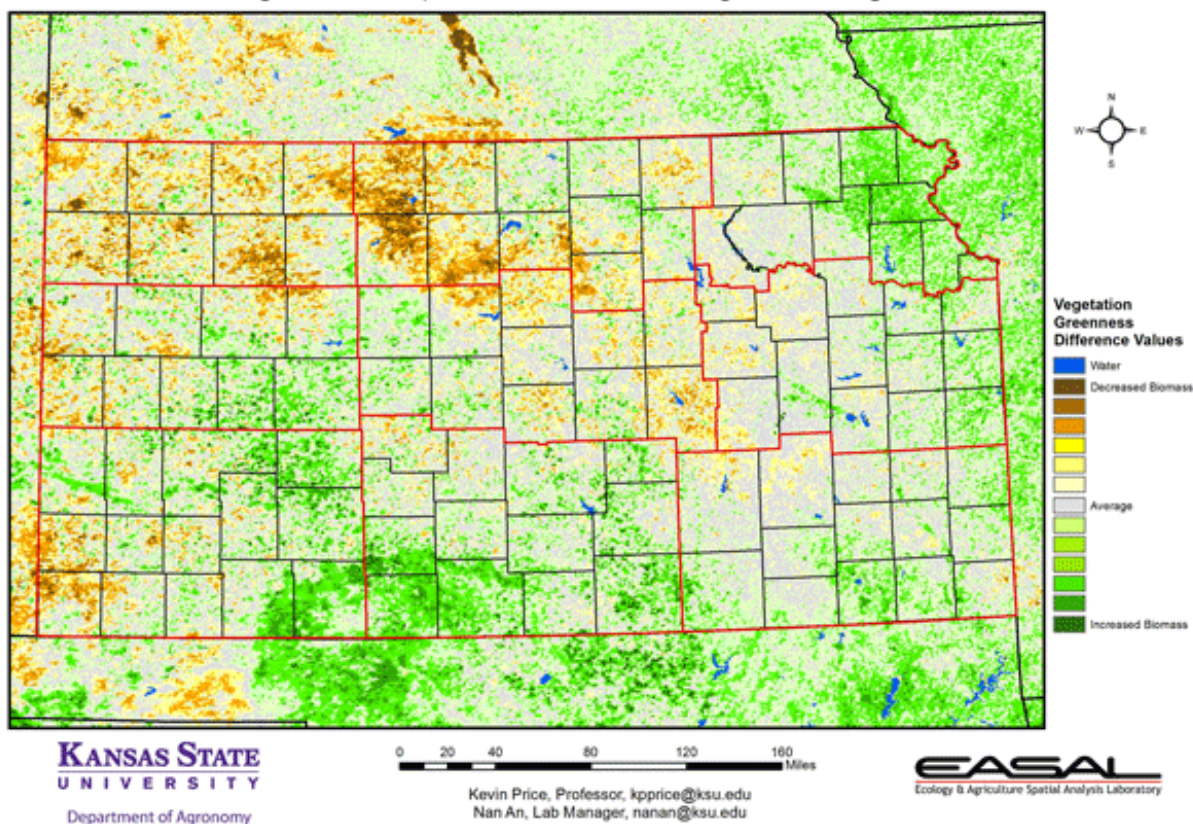
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## Kansas Vegetation Condition Comparison

Mid-August 2014 compared to the 25-Year Average for Mid-August



**Figure 3. Compared to the 25-year average at this time for Kansas, this year's Vegetation Condition Report for August 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows the greatest departure from the long-term average is in north central Kansas, particularly in Phillips and Rooks counties. Concentrated rains in June created problems.**

Kansas State University Department of Agronomy

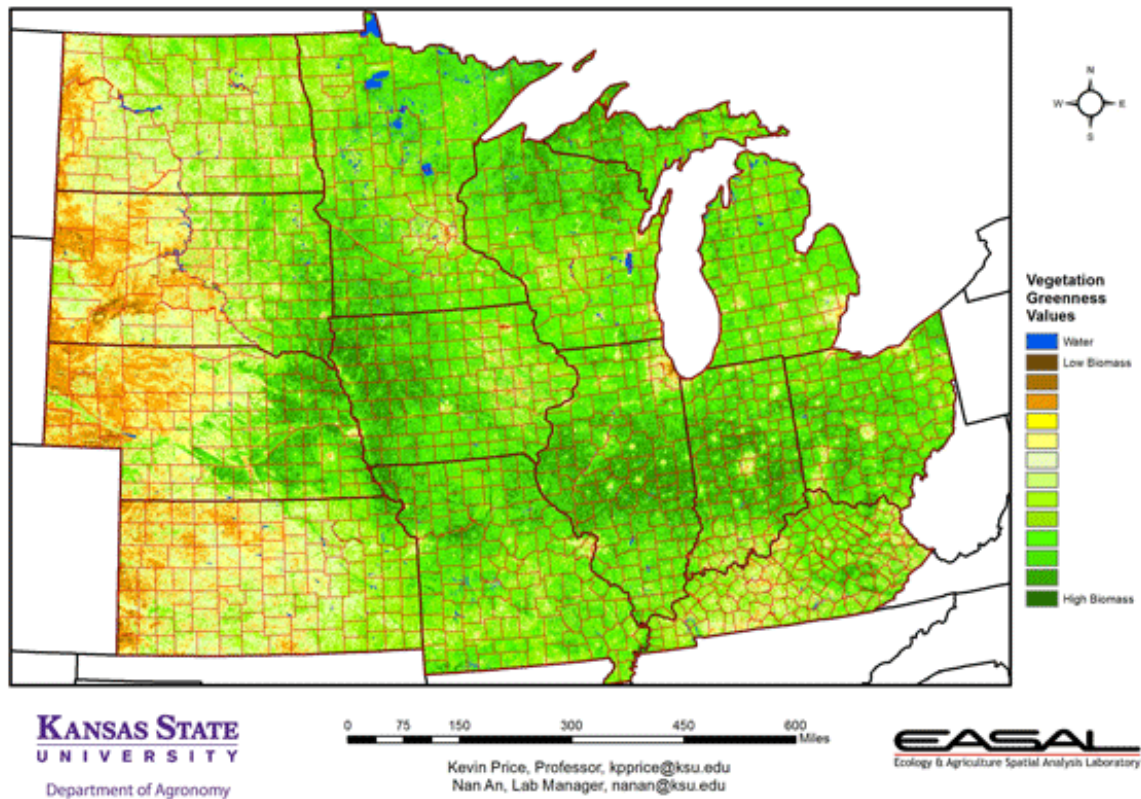
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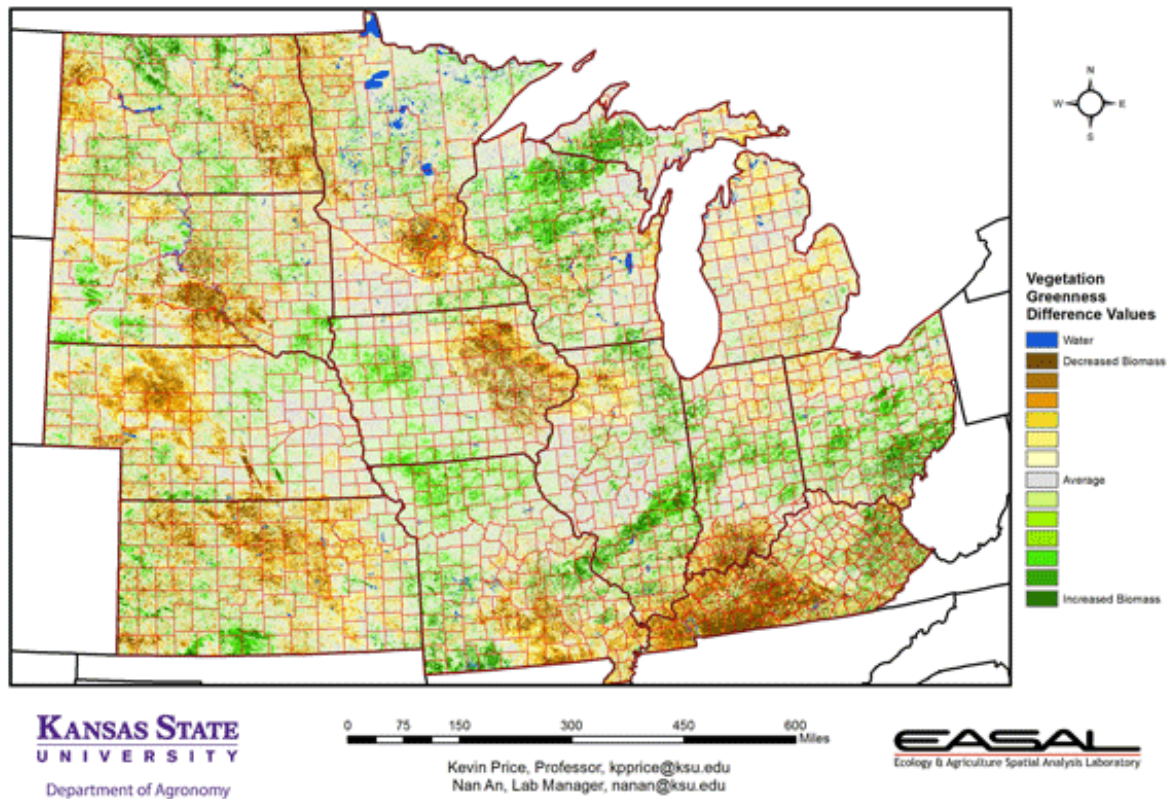
## U.S. Corn Belt Vegetation Condition

Period 33: 08/05/2014 - 08/18/2014



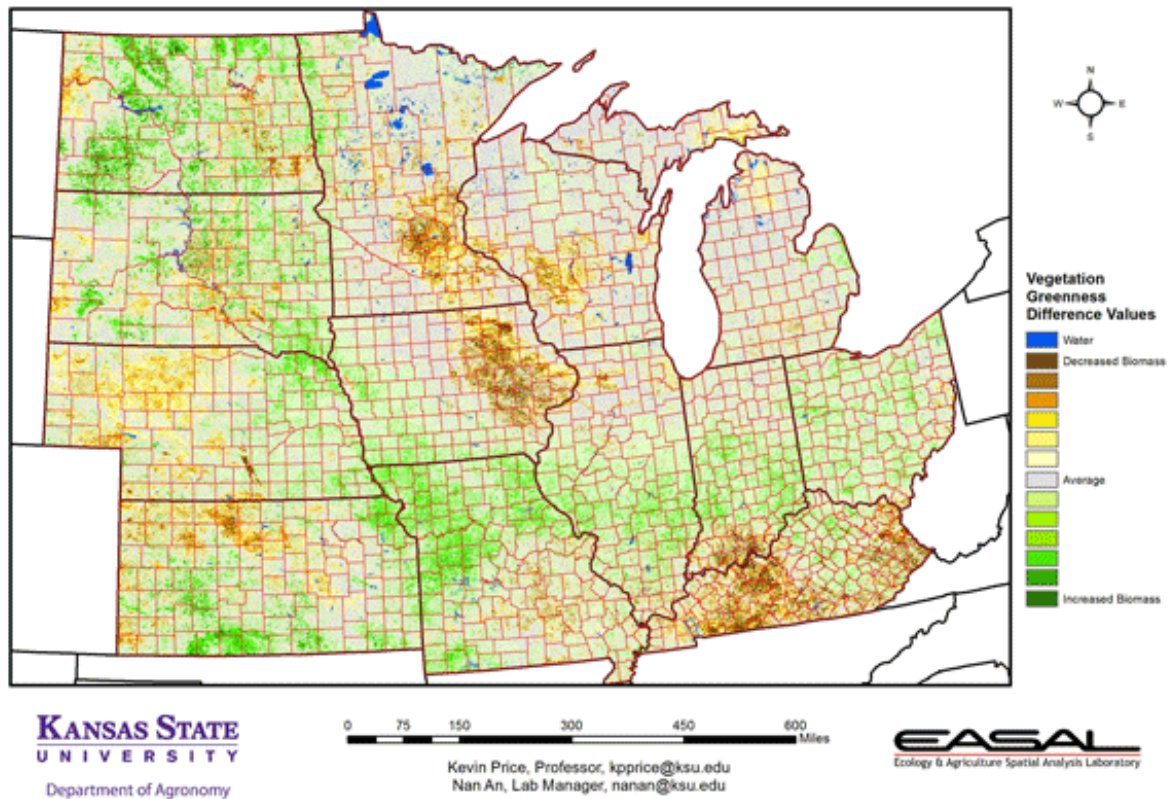
**Figure 4. The Vegetation Condition Report for the Corn Belt for August 5 – 18 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that highest NDVI values are along the Missouri River and into the central Corn Belt. It is interesting to note patches of very high NDVI values next to areas of moderate to low NDVI values. Possible reasons for the differences are different crops (corn or soybeans) and different maturity within a crop.**

# U.S. Corn Belt Vegetation Condition Comparison Mid-August 2014 Compared to Mid-August 2013



**Figure 5. The comparison to last year in the Corn Belt for the period August 5 – 18 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that there are pockets of much lower NDVI values. Particularly notable are the lower values in western Kentucky and eastern Iowa. In Kentucky, corn is reported to be 58 percent good to excellent this year; last year the condition was 85 percent good to excellent.**

**U.S. Corn Belt Vegetation Condition Comparison**  
**Mid-August 2014 Compared to the 25-Year Average for Mid-August**

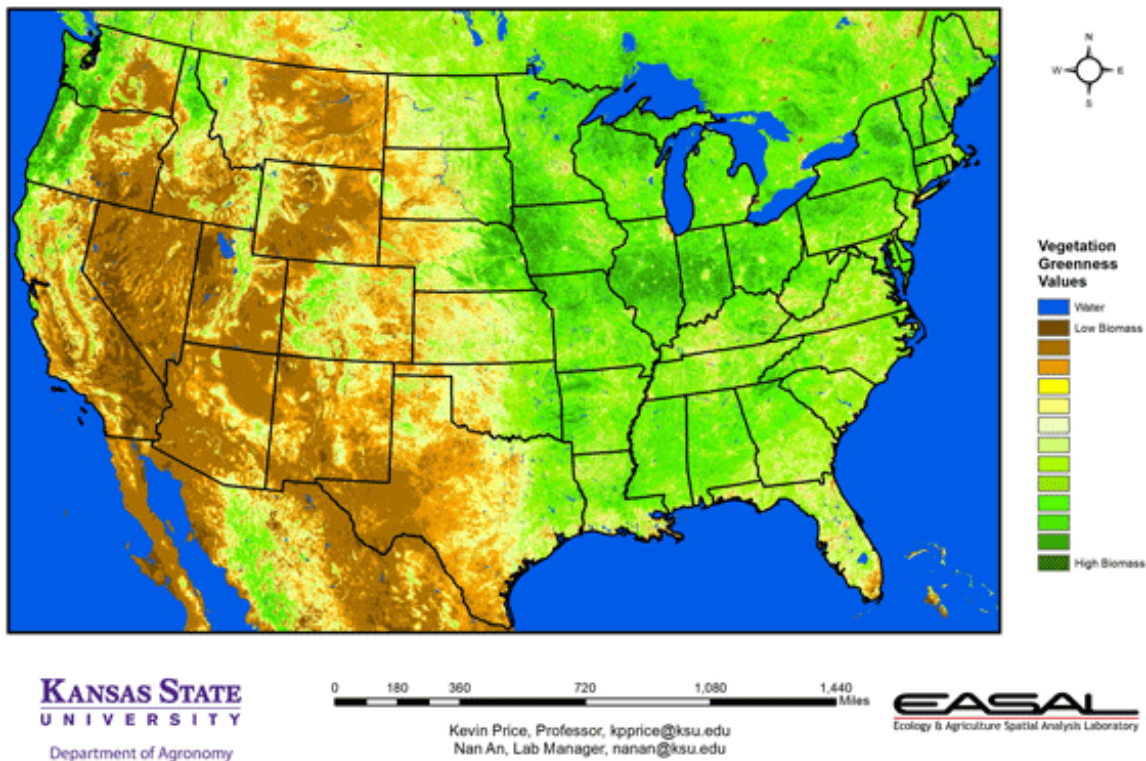


**Figure 6. Compared to the 25-year average at this time for the Corn Belt, this year's Vegetation Condition Report for August 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that greatest increase in biomass production is in the Northern Plains. The greatest decrease is in southeastern Minnesota, eastern Iowa, and western Kentucky. Still, in Iowa the corn is about 8 days ahead of normal maturity and 75 percent good to excellent condition.**



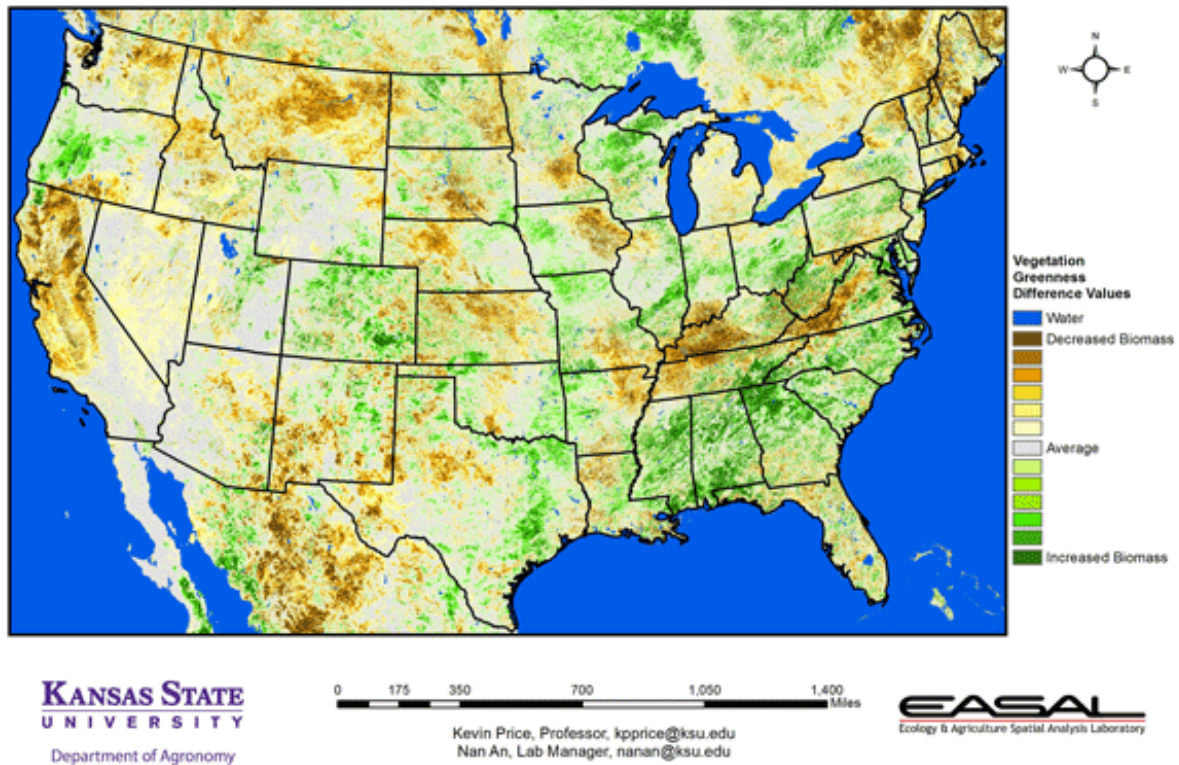
## Continental U.S. Vegetation Condition

Period 33: 08/05/2014 - 08/18/2014



**Figure 7. The Vegetation Condition Report for the U.S. for August 5 – 18 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that highest NDVI values are in the central Corn Belt from eastern Nebraska to Ohio. The Pacific Northwest also has very high biomass activity.**

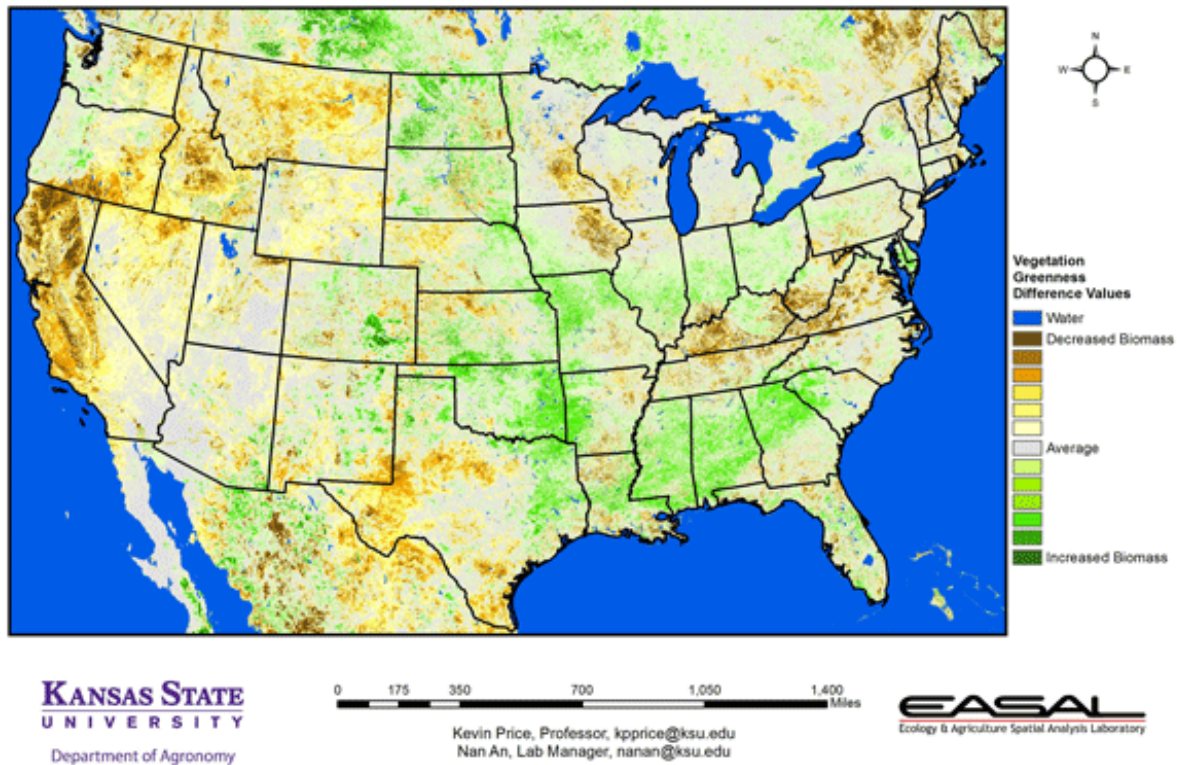
Continental U.S. Vegetation Condition Comparison  
Mid-August 2014 Compared to Mid-August 2013



**Figure 8. The U.S. comparison to last year at this time for the period August 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that one of the largest areas of decreased biomass production is in northern and central California. At the current time, this area is in exceptional drought. This is two categories more severe than the drought category last year at this time.**



Continental U.S. Vegetation Condition Comparison  
Mid-August 2014 Compared to 25-year Average for Mid-August



**Figure 9. The U.S. comparison to the 25-year average for the period August 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that California stands out as the area with the greatest expanse of below-average biomass production. Currently in California, 58 percent of the state is in exceptional drought while last year none of the state was in that category.**

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