



## Extension Agronomy

# eUpdate

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*07/14/2017*

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), 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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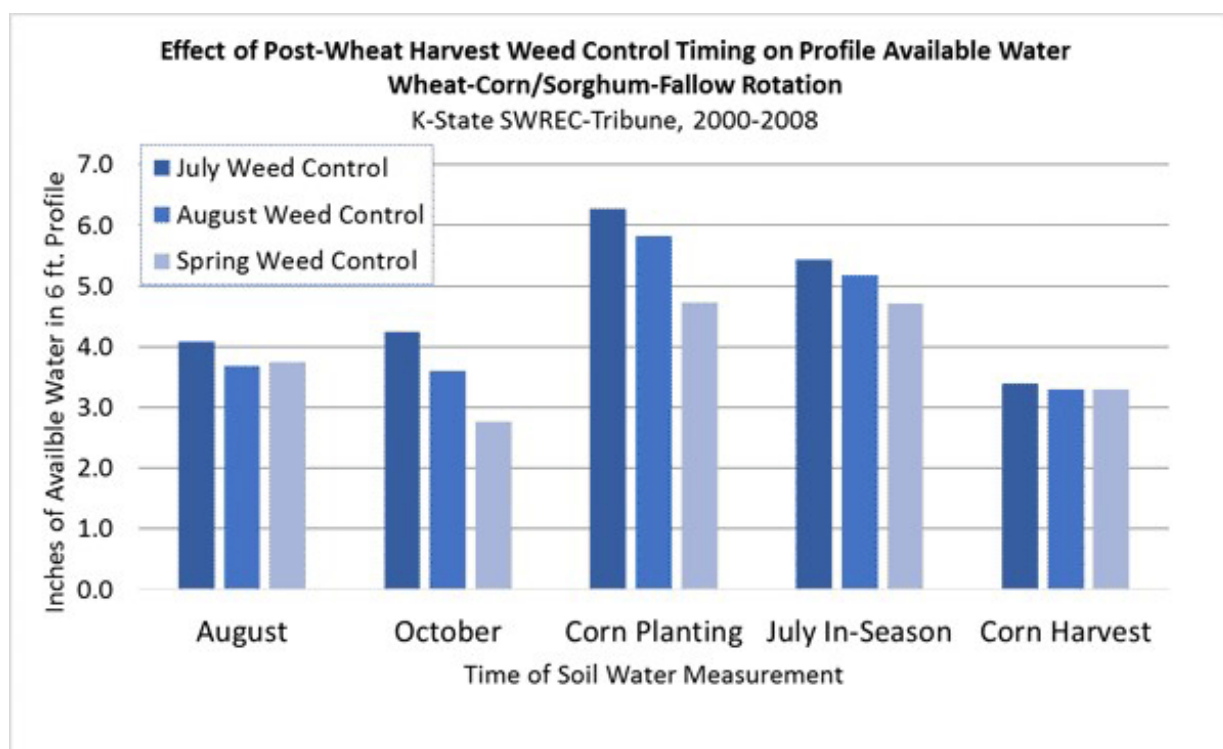
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## 1. Importance of post-wheat harvest weed control in dryland cropping systems

The wet conditions across much of western Kansas this spring have not only delayed and prolonged wheat harvest but have also set up conditions especially favorable to weed growth. The wheat crop this year has produced exceptional levels of residue that will go a long ways toward conserving moisture for use by next year's corn or sorghum crop when no-tilled back into the stubble.

However, to maximize the benefit of the stubble and no-till dryland cropping systems, weeds must be controlled. A multi-year study was conducted at the Southwest Research-Extension Center at Tribune to evaluate the effects of weed control timing after wheat harvest. In this study weeds were terminated after harvest in mid-July, and the third week of August.

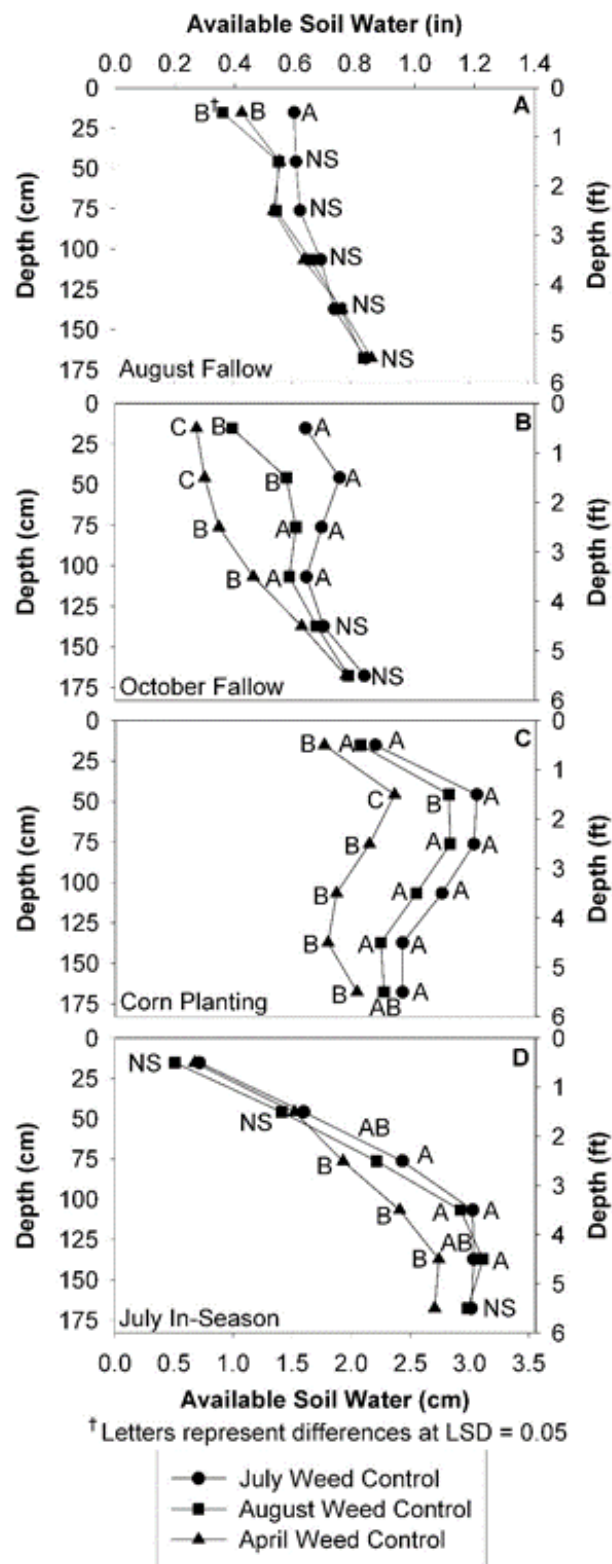
Timing of post-wheat harvest weed control affected plant-available soil water at the October fallow, corn planting, and July in-season measurements. A numerical trend was evident, starting with the August fallow measurement (Figure 1).



**Figure 1. Effect of post-wheat harvest weed control timing on profile available water in a wheat-corn -fallow rotation, Tribune.**

Depletion of soil water by weeds allowed to grow from July through August was evident at the August sampling, at which the July control treatment had an average of 0.4 inches of additional soil water. The effect of growing weeds was evidenced by the greatest depletion of soil water occurring from the surface through the 1.5-foot depth (Figure 2, Panel A). During this time period, the July control treatment had a fallow efficiency of 25.2%, whereas the August and spring control treatments produced efficiencies of 14.7 and 14.6% respectively.

Allowing weed growth through October in the spring control treatment resulted in further soil water depletion as evidenced by a profile soil water advantage for the July control of 0.6 inches over the August control and 1.4 inches over the spring timing treatment. The difference among weed control timings when measured in October was evident to a depth of 4 feet (Figure 2, Panel B). Within the August to October fallow period, fallow efficiencies for the July and August control timings were both positive at 19.4 and 16.3%, respectively, whereas the spring treatment with uncontrolled weeds produced a fallow efficiency of -24.0%.

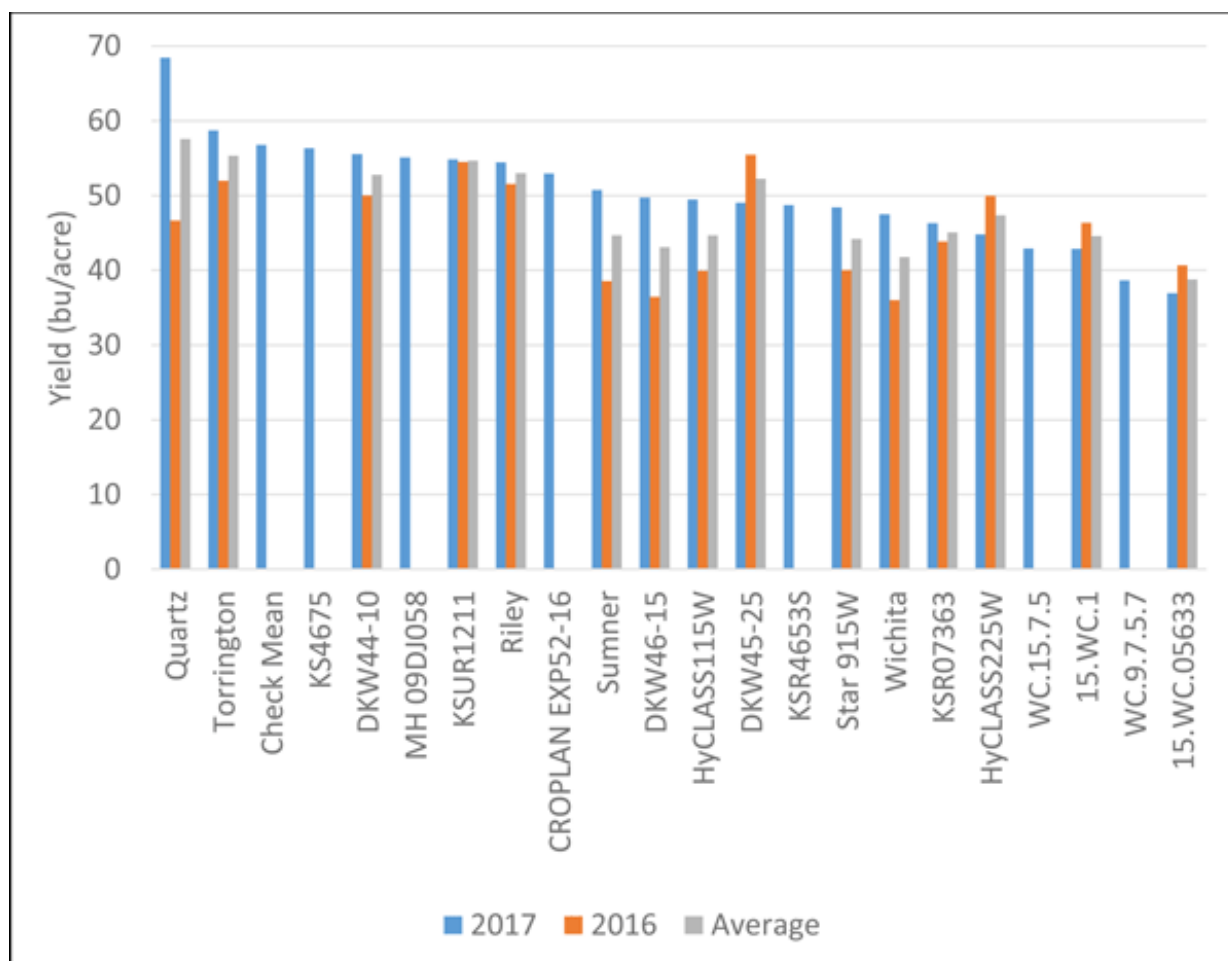


**Figure 2. Effect of post-wheat harvest wheat harvest weed control timing on available soil water by depth and time of measurement in a wheat-corn-fallow rotation, Tribune.**

Weed control timing resulted in available soil water differences at corn planting (Figure 1). At corn

planting, the July and August control treatments had 1.6 and 1.1 inches, respectively, additional available soil water than when weed control was delayed until the spring. Over the entire wheat harvest to row-crop planting period, fallow accumulations were 3.47, 3.09, and 1.89 inches when weed control was performed in July, August, and spring, respectively. This translated into fallow efficiencies ranging from 30.1% for July control to 16.4% for spring control.

July, August, and spring weed control timings resulted in row-crop grain yields of 51, 47, and 36 bu/acre, respectively, when analyzed across years (Figure 3). Both the July and August treatments produced higher grain yields than the spring treatment.



**Figure 3. Effect of post-wheat harvest weed control timing on subsequent corn yields (2004 corn is grain sorghum) in a wheat-corn-fallow rotation, Tribune.**

In the subsequent corn crop, plant stands were unaffected by weed control timing, whereas the ears per acre yield component declined with delayed weed control, indicating increased barrenness. Spring timing of weed control resulted in the lowest values for water use and water use efficiency. The reduced plant-available water in the spring weed control timing was evident at row-crop planting and this shortfall continued to be present even at the July in-season measurement (Figure 2, Panel D), obviously limiting water use and grain yield potential. By using the differences in plant-available water at planting and grain yields among the treatments in this study, 1 inch of plant-available water was worth an average of 9.4 bu/acre in corn grain yield.

## Summary

Delaying weed control in a wheat-corn/sorghum-fallow rotation until spring resulted in soil water depletion that was evident at the first measurement in August. This additional depletion due to weed growth was never recovered, resulting in reduced available soil water at corn planting and persisting throughout the growing season. Differences in plant-available water were clearly reflected in grain yields. Delaying weed control resulted in reductions in grain yields, biomass production, water use, and water use efficiency.

For more information on controlling weeds after wheat harvest, see the article "[Control weeds in wheat stubble before they set seed](#)" in eUpdate No. 640, June 30, 2017.

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## 2. Canola yields in Kansas in 2017

Canola yields at K-State Research and Extension trial sites and producer fields were average to above average in 2017. Overall, the mild winter and adequate moisture throughout the growing season benefited many producers' yields.

Although the winter was generally mild, there were some periods of cold temperatures. Yields tended to be lower where plant stands were thinned by these cold temperatures in December and February. Yields were higher where plant stands remained relatively intact.

Producers in south central Kansas reported yields in the 20 to 55 bushels/acre range. Southeast Kansas producers reported yields in the upper-30s to upper-40s. In central Kansas, yields were reported in the lower 30s to as high as 70 bushels/acre. Northern Kansas producers saw yields from 35 to 45 bushels/acre. Yields were probably the most challenged in south central Kansas as a result of excessive fall growth due to warmer-than-normal temperatures and subsequent winterkill caused by a significant drop in temperatures in mid-December.

Trial sites for the canola breeding program were harvested at Hutchinson, Manhattan, and Pond Creek, Okla. Cultivar averages were at or above 40 bushels/acre at these sites. Garden City was also harvested but was negatively impacted by the late spring snow storm. Trial sites at Concordia and Kiowa had excessive fall growth and eventually succumbed to winterkill. Winter survival scores were taken at Kiowa but the plot was not harvested because of heavy weed pressure. Conway Springs was lost to poor establishment.

The National Winter Canola Variety Trial (NWCVT) at Hutchinson has provided consistent yields over the past two growing seasons.





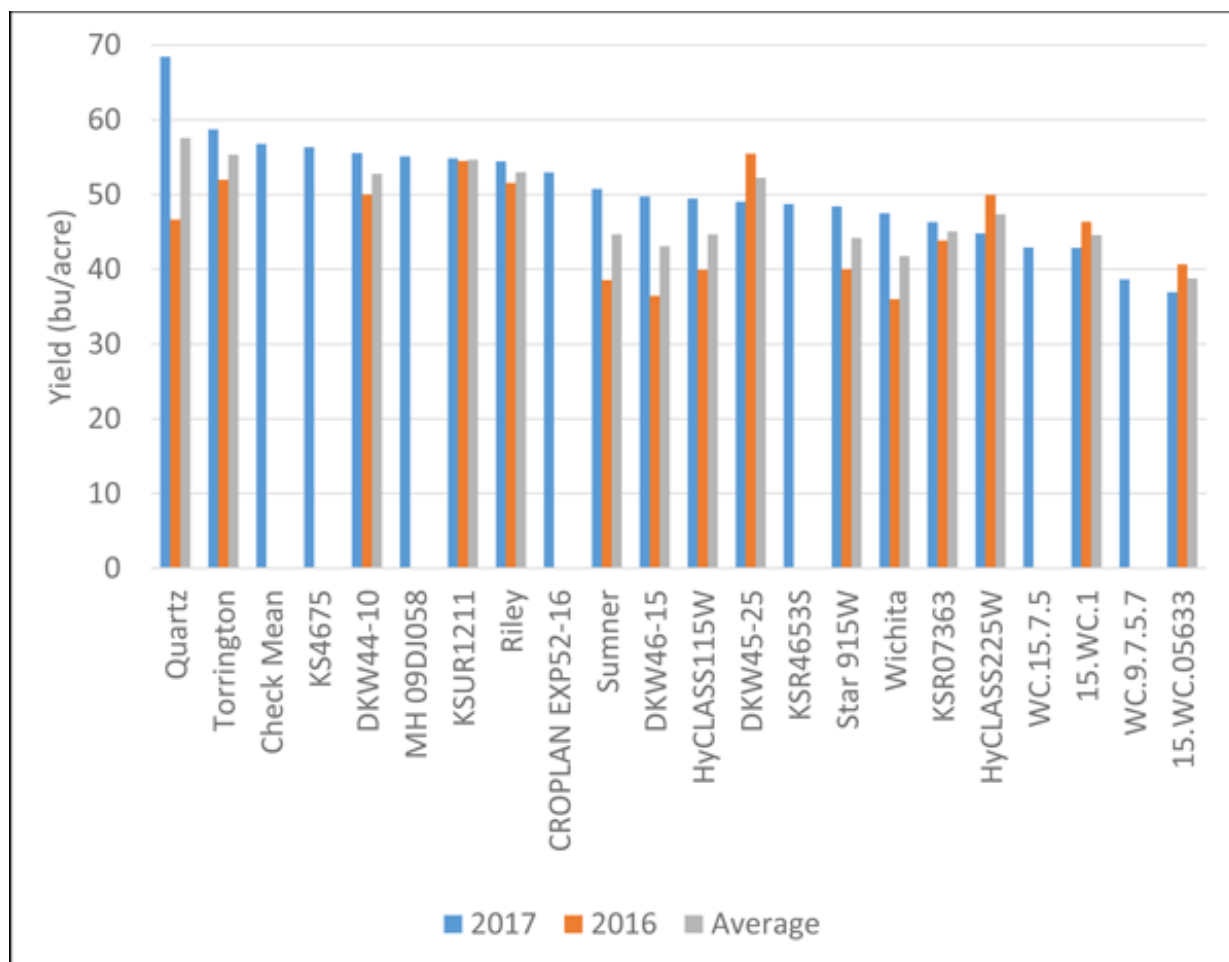
**Figure 1. Plots at National Winter Canola Variety Trial at Hutchinson nearing the appropriate time to swath. Photo by Mike Stamm, K-State Research and Extension.**

The 2017 entries are provided in Table 1. Yields for 2017, 2016, and a two-year average for the open-pollinated (OP) and hybrid NWCVT entries are summarized in Figures 2 and 3, respectively. Quartz was the top yielding OP variety in 2017 at 68.5 bu/acre. It yielded significantly more than all other OP varieties. The next highest yielding variety was Torrington at 58.7 bu/acre. Torrington is a new variety release from K-State in 2016. DKW45-25 was the top yielding variety in 2016 at 55.5 bu/acre. Over two years, the highest yielding varieties were Quartz (57.6), Torrington (55.4), KSUR1211 (54.7), Riley (53.0), and DKW45-25 (52.2).

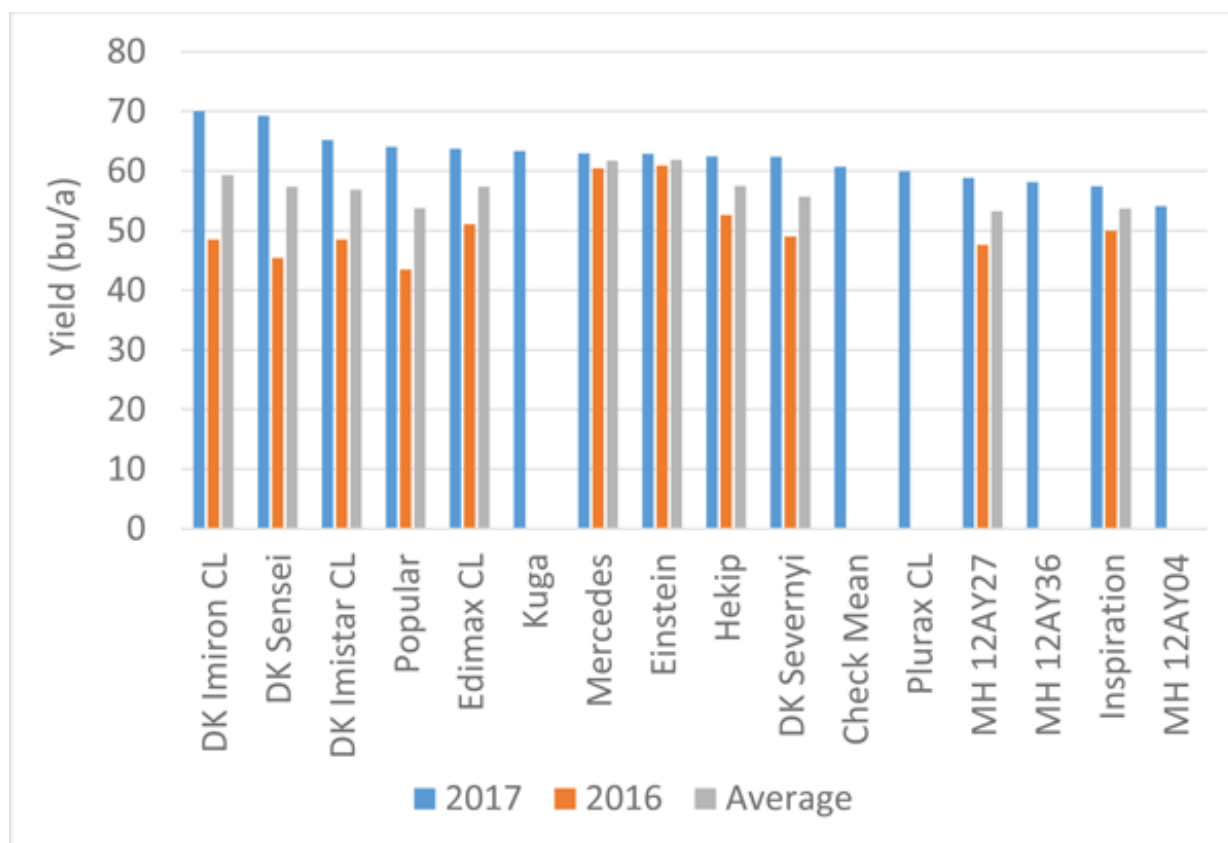
DK Imiron CL was the highest yielding hybrid cultivar in 2017 at 70.0 bu/acre in Hutchinson. DK Sensei was the second highest yielding cultivar at 69.3 bu/acre. Both of these entries are experimental hybrids, possessing the semi-dwarf trait, which is a new technology being evaluated in the NWCVT. Einstein was the highest yielding hybrid in 2016 at 60.9 bu/acre. Averaged over two years, the highest yielding hybrids were Einstein (61.9), Mercedes (61.7), DK Imiron CL (59.3), Hekip (57.5), and Edimax CL (57.4).

Careful variety selection is very important for successful winter canola production. Watch future Agronomy eUpdates for additional trial site results and suggestions to help with variety selection.

<b>Table 1. Entries for the 2017 National Winter Canola Variety Trial</b>			
Name	Source	Type <sup>†</sup>	Trait <sup>‡</sup>
KS4675	Kansas State University	OP	
KSR4653S	Kansas State University	OP	Roundup Ready/SURT
KSR07363 / Star 930W	KSU / Star Specialty Seeds	OP	Roundup Ready
KSUR1211	Kansas State University	OP	SU
Riley	Kansas State University	OP	
Sumner	Kansas State University	OP	SU
Torrington	KSU / Ohlde Seed Farms	OP	
Wichita	Kansas State University	OP	
HyCLASS115W	CROPLAN by WinField	OP	Roundup Ready/SURT
HyCLASS225W	CROPLAN by WinField	OP	Roundup Ready/SURT
CROPLAN EXP52-16	CROPLAN by WinField	OP	Roundup Ready
Quartz	MOMONT / Photosyntech	OP	
MH 09DJ058	MOMONT	OP	
15.WC.1	University of Idaho	OP	
15.WC.05633	University of Idaho	OP	
WC.9.7.5.7	University of Idaho	OP	
WC.15.7.5	University of Idaho	OP	
Star 915W	Star Specialty Seed	OP	RR/SURT
DKW44-10	Monsanto / DEKALB	OP	RR
DKW45-25	Monsanto / DEKALB	OP	RR/SURT
DKW46-15	Monsanto / DEKALB	OP	RR/SURT
Einstein	DL Seeds	H	
Kuga	DL Seeds	H	
Plurax CL	DL Seeds	H	Clearfield
Popular	DL Seeds	H	
Edimax CL	Rubisco Seeds	H	Clearfield
Inspiration	Rubisco Seeds	H	
Mercedes	Rubisco Seeds	H	
Hekip	MOMONT / Photosyntech	H	
MH 12AY04	MOMONT	H	
MH 12AY27	MOMONT	H	
MH 12AY36	MOMONT	H	
DK Imiron CL	Monsanto / DEKALB	H	Semi-dwarf, Clearfield
DK Imistar CL	Monsanto / DEKALB	H	Semi-dwarf, Clearfield
DK Sensei	Monsanto / DEKALB	H	Semi-dwarf
DK Severnyi	Monsanto / DEKALB	H	Semi-dwarf
<sup>†</sup> OP=open pollinated; H=hybrid			
<sup>‡</sup> SURT, SU: sulfonylurea herbicide carryover tolerant			



**Figure 2. Two-year yield results for the Hutchinson OP NWCVT. The Least Significant Difference (LSD) is 8.4 bu/acre for 2017. If two varieties differ by as much or more than the LSD, then we are 95% sure the difference is real and not due to chance. In 2016, there was no statistical difference between varieties.**



**Figure 3. Two-year yield results for the Hutchinson Hybrid NWCVT. The Least Significant Difference (LSD) is 6.4 bu/acre for 2017. If two varieties differ by as much or more than the LSD, then we are 95% sure the difference is real and not due to chance. In 2016, there was no statistical difference between varieties.**

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### 3. Wild emmer wheat: Potential genetic resource for wheat breeding program

(Note: The following is a slightly edited transcript of a short K-State Research and Extension video by Dan Donnert, KSRE videographer. The video can be seen at: <https://www.youtube.com/watch?v=3tN7rSOZkjl&feature=youtu.be> – Steve Watson, Agronomy eUpdate Editor)

We have developed technology for targeted resequencing of coding regions of the entire genome, and we have used this technology, called targeted sequence capture, for resequencing entire gene coding regions of wild emmer wheat and domesticated emmer wheat.

You can see some darker heads throughout the plot in Figure 1. This is material derived from wild relatives of wheat. In this case, it contains wild alleles of all three genomes of wheat. Wheat is a hexaploid species, so it has three full sets of chromosomes. Each chromosome originates from a grass species. We want to go back into that pool to find new genes to help us develop better wheat varieties for Kansas that have better disease resistance, better drought tolerance, better heat tolerance, and other traits.



**Figure 1. Material derived from wild relatives of wheat. From:** <https://www.youtube.com/watch?v=3tN7rSOZkjl&feature=youtu.be>



**Figure 2. Allan Fritz, K-State wheat breeder at Manhattan, explaining how wild emmer could be utilized in the wheat breeding program to benefit producers and consumers. From: <https://www.youtube.com/watch?v=3tN7rSOZkjl&feature=youtu.be>**

This is a project we've been working on for a few years, trying to start to transfer these genes into an adapted material. There's already evidence that there are some genes here for drought tolerance. I have a student who's been doing some screening for heat tolerance out of these materials, and there are some that have very good tolerance to high temperatures.

When we start talking about dealing with climate change, a highly variable climate, having wheat varieties with the ability to deal with all these stresses is really important. We know from previous work at other places there's some fusarium head blight resistance. There have also been resistance genes to stripe rust that have been transferred out of wild emmer.

We've done some preliminary screening and have identified some lines that potentially have wheat streak resistance. So there's a lot of different traits there; a lot of value. It really goes beyond the commercial production side of it. We think there's a lot of potential value also for consumers.

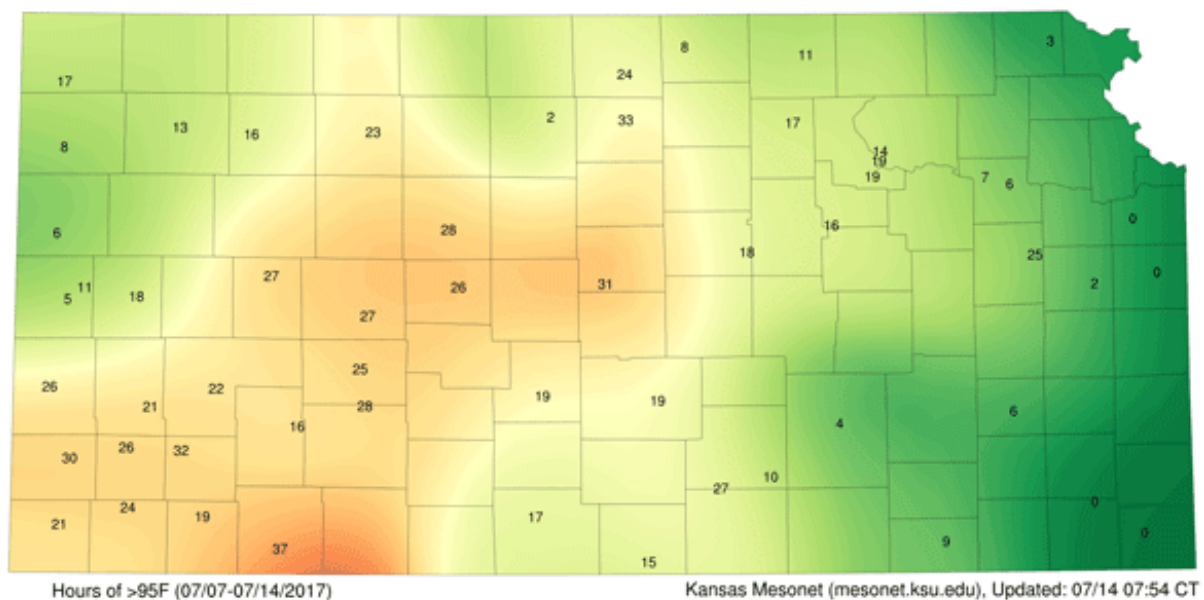
Wild emmers will go up in excess of 30 percent protein. We also know that you can find some wild emmer that have about twice the antioxidant capacity that domesticated durum has. Domesticated durum wheat is what the domesticated form of emmer is. So we know there is high antioxidant capacity. We know they accumulate iron and zinc at a much higher level. So we can start to talk about nutritionally superior wheat varieties that can come out of this material. We think there's real value there, as well as for our consumers as well as helping production in an increasingly variable environment.

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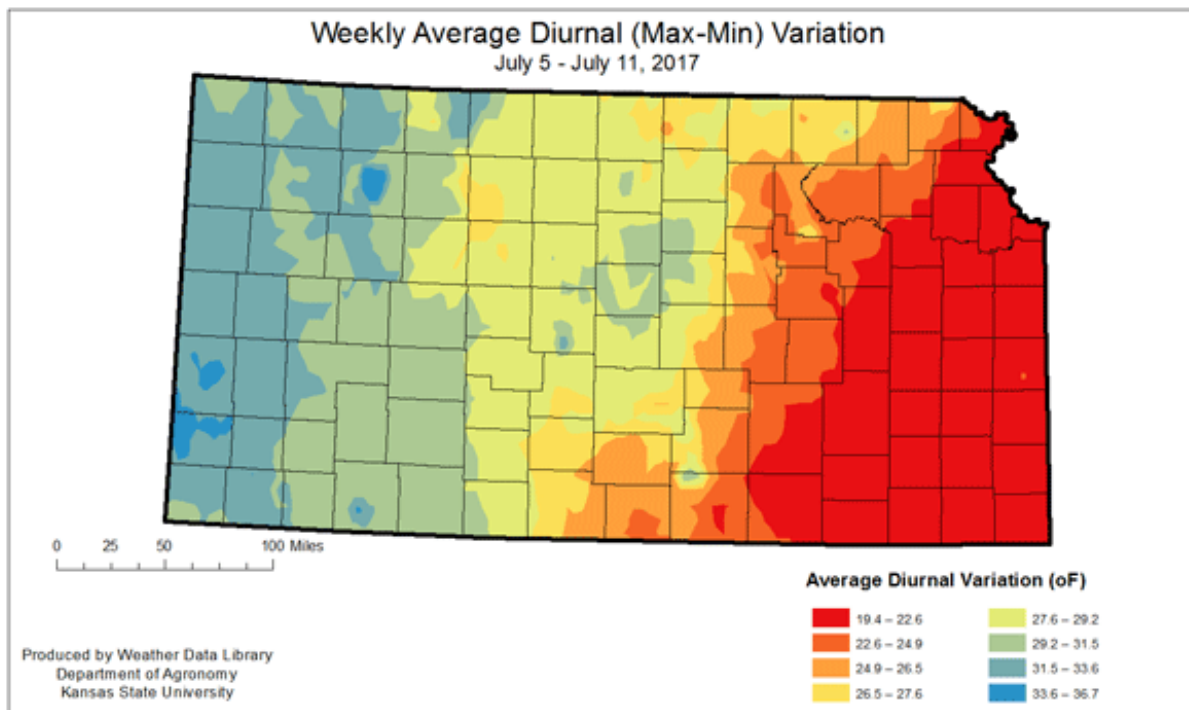
#### 4. Impacts of hot weather on summer row crops

The heat experienced in Kansas recently can cause problems for all summer row crops. With corn, the latest Crop Progress and Conditions Report from USDA-NASS, July 10, 2017, shows that the crop has already reached more than 40% silking, except in the western districts. At this point, high heat could have an impact on abortion of early-formed grains and also abort more susceptible kernels already formed in the tip of the corn ears. High heat at this point could also impact pollination across the western section of the state. Overall, temperatures above 95 degrees F (Figure 1), and more importantly lower fluctuations in the difference between day and night temperatures (diurnal temperatures, Figure 2), will have a critical impact on kernel number (abortion process) and on the duration of grain filling (occurring now in southeast Kansas), consequently impacting final kernel size/grain weight.



**Figure 1. Total hours with average air temperature greater than 95 degrees F from July 7 to 13.**

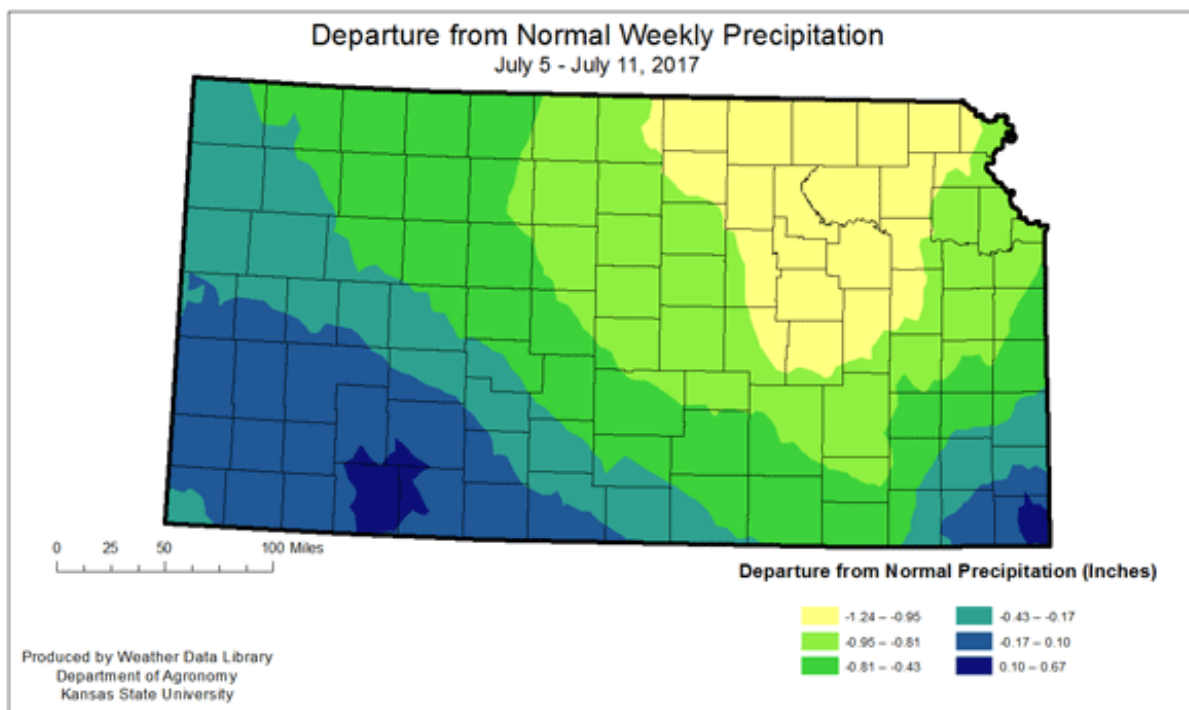
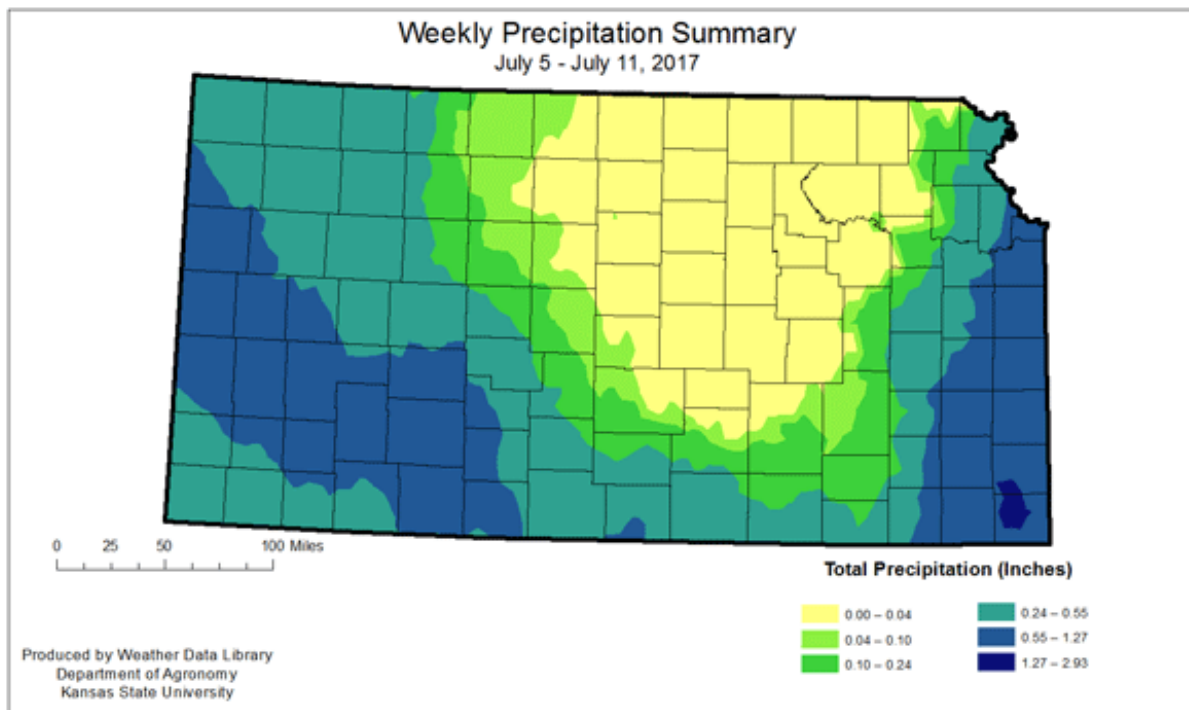




**Figure 2. Weekly average diurnal (max – min) temperature variation for July 5 to 11.**

Heat stress will have more of an impact on corn at this stage of growth when combined with drought stress. For the July 5-11 period, precipitation amounts have been erratic with adequate (1 inch or more of rain) in the eastern and part of the western areas of the state. A large departure from the normal precipitation was recorded in the northeast, north central, and east central parts of the state, with approximately an inch less rain than normal during this period (Figure 3).

But even when drought stress is not an issue, heat stress alone will increase the mismatch between pollen shed and silk extrusion when corn reaches flowering. The potential for yield reductions around pollination are quite high, diminishing as the crop progresses into later stages (blister and milk stage).



**Figure 3. Weekly precipitation summary (upper panel) and departure from normal weekly precipitation (lower panel) for July 5-11 period.**

For soybean and sorghum, heat stress could also impact plant growth and maximum yield potential but the risk is less than for corn at this point in the season since soybeans and sorghum are not yet in the high-water-demand period (pod formation for soybeans and flowering for sorghum). Based on

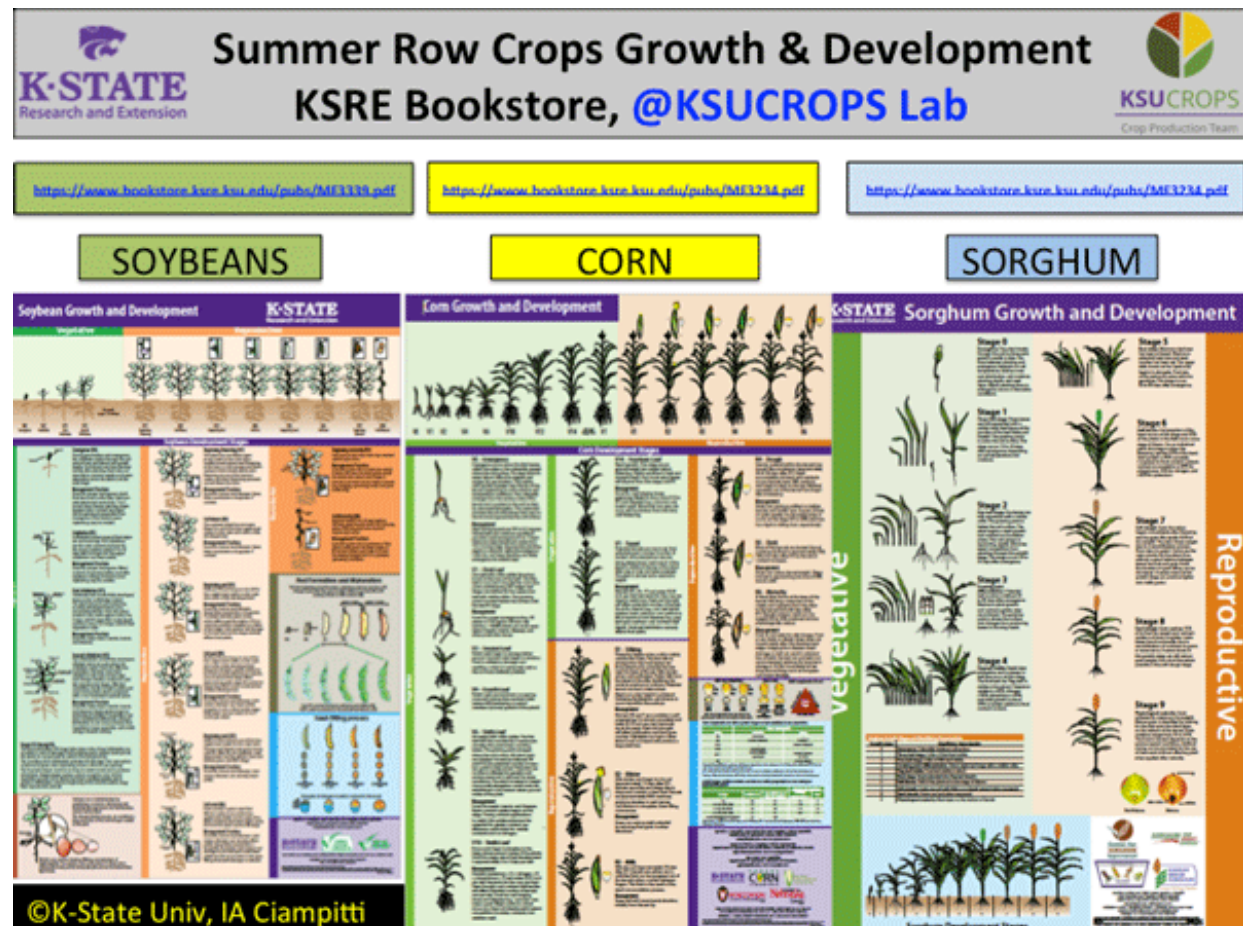
the last Crop Progress and Conditions Report from USDA-NASS (July 10, 2017), soybeans are just blooming (27%) and sorghum is only starting to head (4%). These crops would have a higher level of risk of yield reductions due to high temperatures, combined with drought stress, if the timing of the stress were to occur toward the end of July to mid-August.

For more information on summer row crops growth and development and production management, visit all K-State and KSUCROPS Lab publications:

Corn: <http://www.bookstore.ksre.ksu.edu/pubs/MF3305.pdf>

Soybean: <https://www.bookstore.ksre.ksu.edu/pubs/MF3339.pdf>

Sorghum: <https://www.bookstore.ksre.ksu.edu/pubs/MF3234.pdf>



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## 5. Iron chlorosis in soybeans

Soybean is one of the most susceptible field crops to iron chlorosis, and this problem is not uncommon in Kansas. Iron is a catalyst in the production of chlorophyll, so a deficiency of iron (Fe) displays as a yellowish or pale color in the leaves. Iron is an immobile nutrient in the plant so symptoms first appear on the youngest leaves.

Iron chlorosis is usually caused by a combination of stresses rather than a simple deficiency of available soil iron. Some of the soil chemical factors that play a role in iron chlorosis include high pH, high carbonate levels, high salinity (EC), low available iron (DTPA-Fe), and high soil nitrate levels. Other factors that play a role include variety susceptibility and the presence of soybean cyst nematodes and root rotting fungi. So iron chlorosis is a complex problem, and not one that can be determined solely on the basis of a soil Fe test.

One of the factors that can be involved in the development of iron chlorosis in soybeans is the high levels of soil nitrate. Iron is taken up in the ferric form ( $\text{Fe}^{+3}$ ), then is immediately converted within the plant into the ferrous form ( $\text{Fe}^{+2}$ ) (existing in the chlorophyll). High concentrations of nitrate-N seem to inhibit this conversion of  $\text{Fe}^{+3}$  to  $\text{Fe}^{+2}$  in the plant, creating Fe deficiencies. It is important to keep in mind that high soil nitrate levels alone will not cause iron chlorosis in soybeans, but is simply one additional factor that will magnify the problem.



**Figure 1. Wheel tracks are noticeable with greener plants in this field of soybeans with iron chlorosis. Soil nitrate levels in these wheel tracks are much lower than the rest of the field due**

to some compaction and the consequent N loss by denitrification. Usually where soil nitrate levels are lower, plants are not as green. But in this case of iron chlorosis, it's actually the reverse situation. That's because higher nitrate levels make iron chlorosis symptoms worse. Photo by Dorivar Ruiz Diaz, K-State Research and Extension.

### Fertilization strategies for iron chlorosis

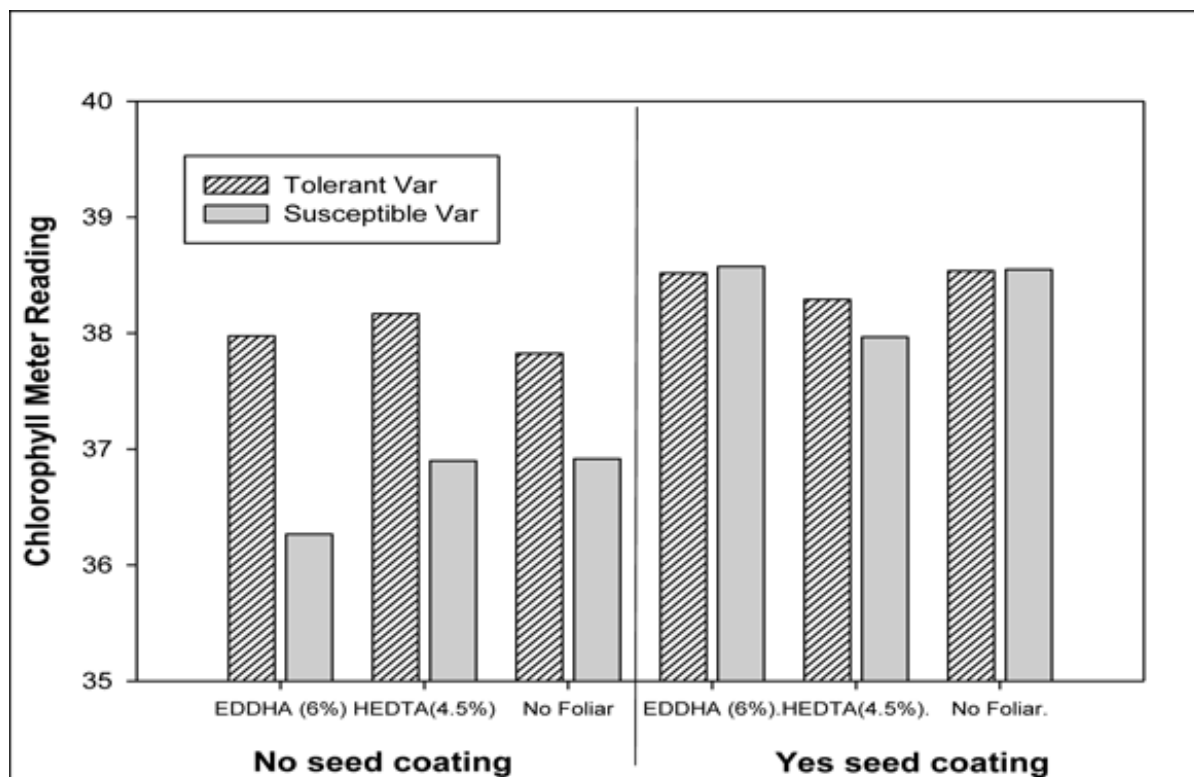
In 2009-10, we conducted tests at eight locations in Kansas with seed coating treatments and foliar iron treatments to correct iron deficiency symptoms. We used two varieties, one with good iron chlorosis tolerance and one that was susceptible to iron chlorosis and locations were under irrigated conditions.

The seed coating treatment was approximately 0.3 lb/acre of actual Fe (chelated EDDHA Fe -6%). The foliar treatments were 0.1 lb/acre EDDHA Fe (6%) and 0.1 lb/acre HEDTA Fe (4.5%). There was an untreated check included. Soil pH at these locations varied from 7.9 to 8.4.



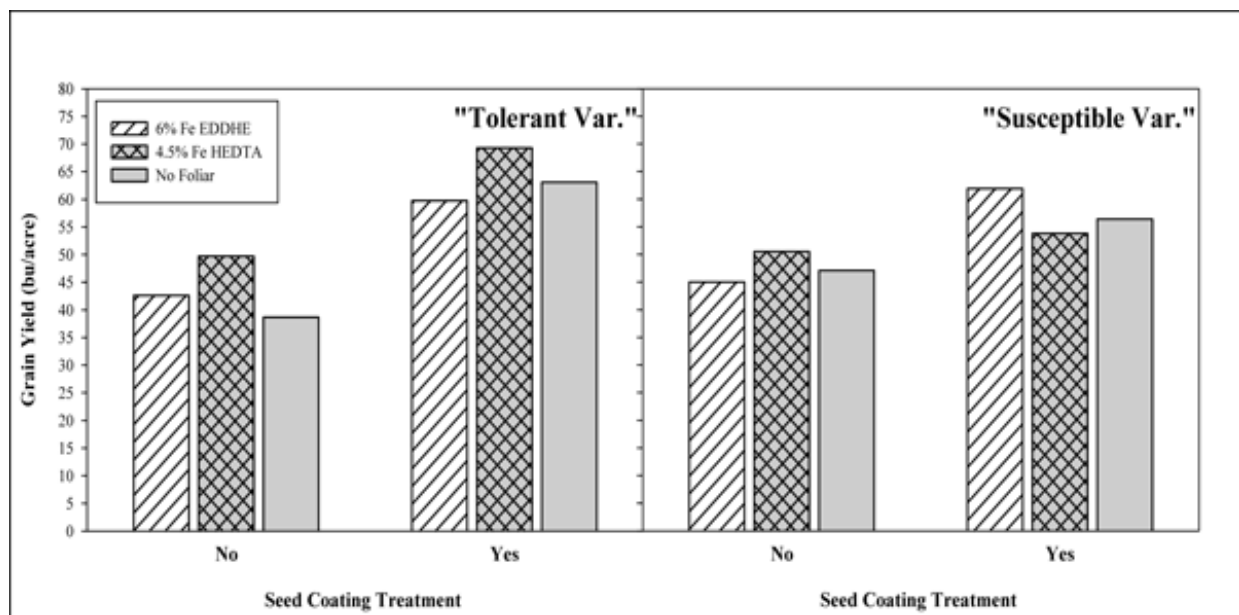
**Figure 2. Soybean response to seed coating with chelated iron fertilizer. Photos by Dorivar Ruiz Diaz, K-State Research and Extension.**

*Greenness.* The seed coating treatment had a significant effect in improving the greenness of the foliage, as shown by the chlorophyll meter reading. Overall, the greening response to the seed coating was greater than response to foliar iron applications. The variety most susceptible to iron chlorosis greened up in response to the seed coating much more than the variety more tolerant to iron chlorosis, even though there is also increase in greenness with the tolerant variety. This indicates that the tolerant variety stayed greener during the growing season but still showed additional benefit from the seed coating treatment. The seed treatment also increased plant height by an average of about 5 inches for both varieties (data not shown).



**Figure 3. Chlorophyll meter reading after foliar Fe application. Higher values are correlated with greener plant leaves. Under these conditions favorable to iron chlorosis, an iron chelate seed coating improved greenness readings.**

*Yield.* Both the tolerant and susceptible variety also had a good yield response to the iron chelate seed coating, and no significant yield response to the foliar iron chelate treatments. Yield increase due to the seed coating treatment in the susceptible variety was approximately 10 bu/acre, while yield increase in the tolerant variety was approximately 20 bu/acre. Previous studies suggested that tolerant varieties tend to utilize Fe fertilizer sources more efficiently, which would explain these results in plant response observed in our study.



**Figure 4. Average yield for the “tolerant” variety without seed coating treatment was 44 bu/acre, and with seed coating treatment was 63 bu/acre. Average yield for the “susceptible” variety without seed coating treatment was 47 bu/acre, and with seed coating treatment was 58 bu/acre.**

### Summary

- Fe deficiency potential cannot be explained well by any single soil parameter.
- Foliar Fe treatments to soybeans with iron chlorosis seem to increase the “greenness” effectively but results suggest that yield increase may be inconsistent.
- An iron chelate seed coating provides significant yield increases to soybeans under conditions favorable to iron chlorosis. Another alternative to seed coating may be in-furrow application of chelated Fe fertilizer. Seed contact with the fertilizer source seems to be particularly important for reducing iron chlorosis symptoms.
- If iron chlorosis has been a common problem in the past, producers should select a soybean variety that is tolerant to Fe chlorosis. It may also pay to also use a chelated iron foliar treatment, in-furrow application of Fe chelate, or an iron chelate seed coating.
- Producers should avoid excessive application of nitrogen fertilizer to the crop that precedes soybeans in the rotation. In fields with some risk of iron chlorosis, the high levels of soil nitrate may be a complicating factor.

This study was supported by the Kansas Soybean Commission.

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## 6. Updated Wheat Variety Disease and Insect Ratings publication

Many farmers are now evaluating the performance of their current varieties and considering new varieties they should grow in the future. Clearly, the yield potential of wheat variety is a top priority, but other traits are also important to consider when selecting a variety.

*Wheat Variety Disease and Insect Ratings 2017*, from K-State Research and Extension, has now been for this year. Agronomic characteristics and disease resistance information is included, as well as a brief description of some of the more commonly grown and upcoming wheat varieties in the state.

Genetic resistance to diseases and insect pests is usually the most effective, economical, and environmentally sound control method. Resistance ratings represent results of multiple field and greenhouse evaluations by public and private wheat researchers. These ratings can help producers select wheat varieties and minimize potential for serious yield losses.





# Wheat Variety Disease and Insect Ratings 2017

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Entomologist

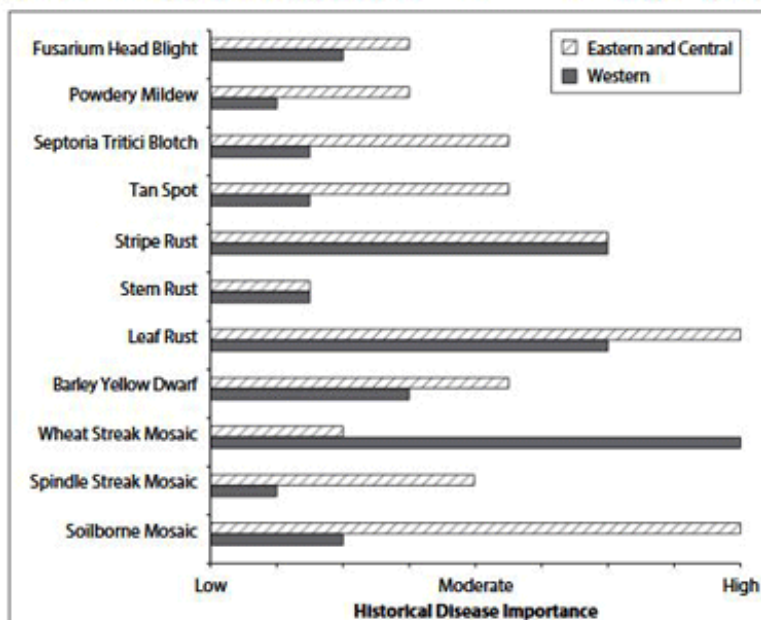
Variety selection is one of the most important decisions a wheat grower makes. This choice profoundly influences the potential wheat crop's productivity. Agronomic characteristics, such as height, acid soil tolerance, and maturity, determine how well a variety is adapted for a region or desired cropping system. Selecting a good variety also influences how well the crop tolerates drought or resists diseases and insects.

The agronomic characteristics and resistance ratings in this publication summarize results of multiple field and greenhouse tests by public and private wheat researchers.

The ratings are intended to help producers select wheat varieties according to their specific needs. The paragraphs below contain suggestions for using this information to minimize the potential for production problems and resulting yield losses. Growers should consult the latest K-State wheat performance test report for additional information about varieties that have yielded well in their area.

Although great efforts were made to confirm the accuracy of these ratings, no guarantee can be made that the information is without error. A variety's agronomic characteristics are generally stable but can be influenced by unanticipated interactions with production practices or environment. Disease and pest reactions are influenced by regional populations of the pathogens or insects and may vary between years.

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**Figure 1. Regional importance of wheat diseases in Kansas.** The importance of wheat diseases is based on their potential to cause yield loss and how often it reaches damaging levels in different regions of the state. The relative importance of the diseases is the product of historical records of disease losses in Kansas and expert opinion by wheat disease specialists. Not all diseases and insect pests are considered in the figure. Growers may need to adjust their priorities based on previous crop production practices on their farms.

## How to Use the Variety Ratings

Evaluate how well a variety is adapted for your area. The agronomic characteristics of a wheat variety influence its ability to provide consistent, high yields. The importance of characteristics such as relative maturity, height, and drought tolerance vary regionally in Kansas. For example, varieties successful in western Kansas tend to have a medium or medium-late maturity and medium height or taller, as well as good drought tolerance (Table 1). In contrast, wheat varieties with early or medium-early maturity, medium or shorter height, and good acid soil tolerance are most successful in central Kansas. Information about the characteristics of

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Electronic versions of the *Wheat Variety Disease and Insect Ratings 2017* publication MF991 can be found (and ordered) at: <http://www.bookstore.ksre.ksu.edu/Item.aspx?catId=299&pubId=1564>

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## 7. Tours of on-farm corn tests in Sedgwick County, July 20

K-State Research and Extension and the Sedgwick County Extension office will host tours of a farm that is using on-farm research to optimize seeding rates and row spacing for irrigated and dryland corn in Sedgwick County on Thursday, July 20th. Discussion will focus on the use of satellite imagery, site-specific precision farming, and other precision agriculture tools to help farmers fine-tune their seeding rates. An update on current corn and soybean crop condition/herbicides will be discussed as well.

The **first stop** will begin at 5:30 p.m. It will be roadside at Bruce Seiler's field on the NE corner of 101<sup>st</sup> St N and West St. Sandwiches and refreshments will be provided. An on-farm research plot comparing irrigated corn seeding rates in 15" rows will be evaluated. In addition, current corn growth and development conditions will be discussed. **Directions to the field are as follows:** From the intersection of N Ridge Rd and 109<sup>th</sup> St N, go 2 miles east on 109<sup>th</sup> St to West Street. At West St, go South for  $\frac{3}{4}$  of a mile and the field will be on the east side of the road.

At the conclusion of the first stop, the **second stop** will begin at Bruce Seiler's dryland field on the NW corner of 109<sup>th</sup> St N and N Ridge Rd (meet just west of the house). This plot is similar to the first, but in a dryland situation. After the corn plot, we will cross the road to look at soybeans. K-State weed control specialist Dallas Peterson will be discussing herbicide options for the crops.

Speakers include Ignacio Ciampitti, K-State Extension specialist; Dallas Peterson, K-State Extension specialist; John Hecht, Crop Quest; Bruce Seiler, cooperating farmer; Dale Fjell, Kansas Corn Commission; and Zach Simon, Sedgwick County Extension agent. The tour will conclude by 8:00 p.m.

For more information about the tour or to RSVP, contact Zach Simon at the Sedgwick County Extension office at 316-660-0153, or Jackie Fees at 316-660-0143. Please RSVP if you intend to join us for supper.

Ignacio Ciampitti, Crop Production and Cropping Systems Specialist  
[ciampitti@ksu.edu](mailto:ciampitti@ksu.edu)

## 8. Tours of on-farm corn tests in Saline County, July 21

K-State Research and Extension and the Central Kansas Extension District will host tours of two farms that are using on-farm research to optimize seeding rates for dryland corn and soybeans in Saline County on Friday, July 21. Discussion will focus on the use of satellite imagery, site-specific precision farming, and other precision agriculture tools to help farmers fine-tune their seeding rates.

The first stop will begin at 8:30 a.m. at the Matt Everhart farm located at 9512 E. Hedberg Rd., Gypsum, or 2 miles east of Gypsum on K-4 Hwy then 1 mile south on Donmyer Rd. An on-farm research plot comparing soybean seeding rates of 60,000, 100,000, and 140,000 seeds per acre in 15" rows will be evaluated. In addition, current soybean growth and development conditions will be discussed.

The second stop will begin at 10:00 a.m. at Knopf Farms hay shed located just north of Gypsum on K-4 Hwy. An on-farm research plot that has used satellite imagery to optimize dryland corn seeding rates will be discussed, along with site-specific precision farming tools for soybean and corn seeding rates. There will also be presentations showing producers what K-State is doing regarding soil moisture monitoring, how to use soil moisture to delineate field management zones, and a discussion of future applications for soil moisture information.

Speakers include K-State Extension specialist Ignacio Ciampitti; Andres Patrignani, K-State assistant professor of soil water processes; Dale Fjell, Kansas Corn Commission; Tom Maxwell, Extension agent; and cooperating farmers. The tour will conclude by 11:30 a.m.

For more information about the tour, contact Tom Maxwell at the CKD-Salina office at 785-309-5850.

All interested persons are invited to attend, no RSVP is needed.

Ignacio Ciampitti, Crop Production and Cropping Systems Specialist  
[ciampitti@ksu.edu](mailto:ciampitti@ksu.edu)

## 9. Comparative Vegetation Condition Report: June 27 – July 3

The weekly Vegetation Condition Report maps below can be a valuable tool for making crop selection and marketing decisions.

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 27-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 Vegetation Condition Report (VCR) maps were originally developed by Dr. Kevin Price, K-State professor emeritus of agronomy and geography, and his pioneering work in this area is gratefully acknowledged.

The maps have recently been revised, using newer technology and enhanced sources of data. Dr. Nan An, Imaging Scientist, collaborated with Dr. Antonio Ray Asebedo, assistant professor and lab director of the Precision Agriculture Lab in the Department of Agronomy at Kansas State University, on the new VCR development. Multiple improvements have been made, such as new image processing algorithms with new remotely sensed data from EROS Data Center.

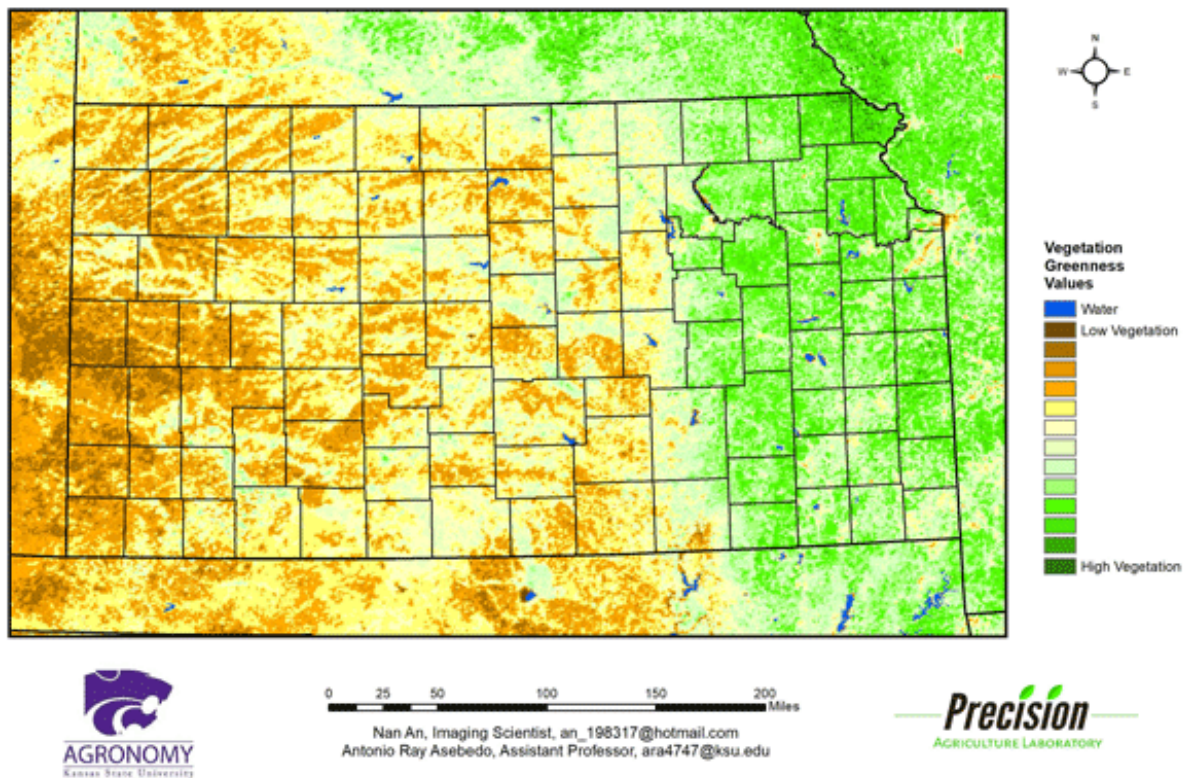
These improvements increase sensitivity for capturing more variability in plant biomass and photosynthetic capacity. However, the same format as the previous versions of the VCR maps was retained, thus allowing the transition to be as seamless as possible for the end user. For this spring, it was decided not to incorporate the snow cover data, which had been used in past years. However, this feature will be added back at a later date. In addition, production of the Corn Belt maps has been stopped, as the continental U.S. maps will provide the same data for these areas. Dr. Asebedo and Dr. An will continue development and improvement of the VCRs and other advanced maps.

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



## Kansas Vegetation Condition

Period 27: 06/27/2017 - 07/03/2017



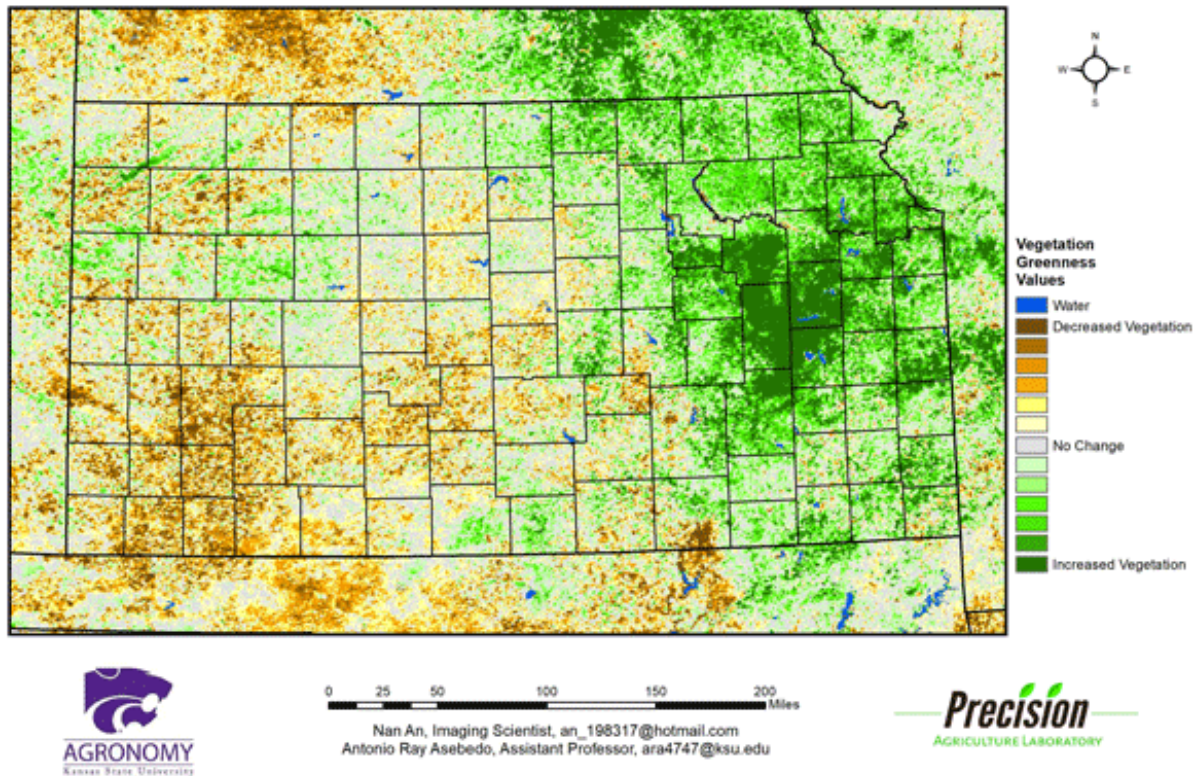
**Figure 1. The Vegetation Condition Report for Kansas for June 27 – July 3, 2017 from K-State’s Precision Agriculture Laboratory shows the greatest vegetative activity is in eastern Kansas, extending into extreme northeast Kansas. Dry weather has slowed vegetative activity in the west, but a pocket of increased activity is visible in the Arkansas River Valley west of Garden City. This is an area of intense alfalfa production.**

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**Kansas Vegetation Condition Comparison**  
Late-Jun/Early-Jul 2017 compared to the Late-Jun/Early-Jul 2016

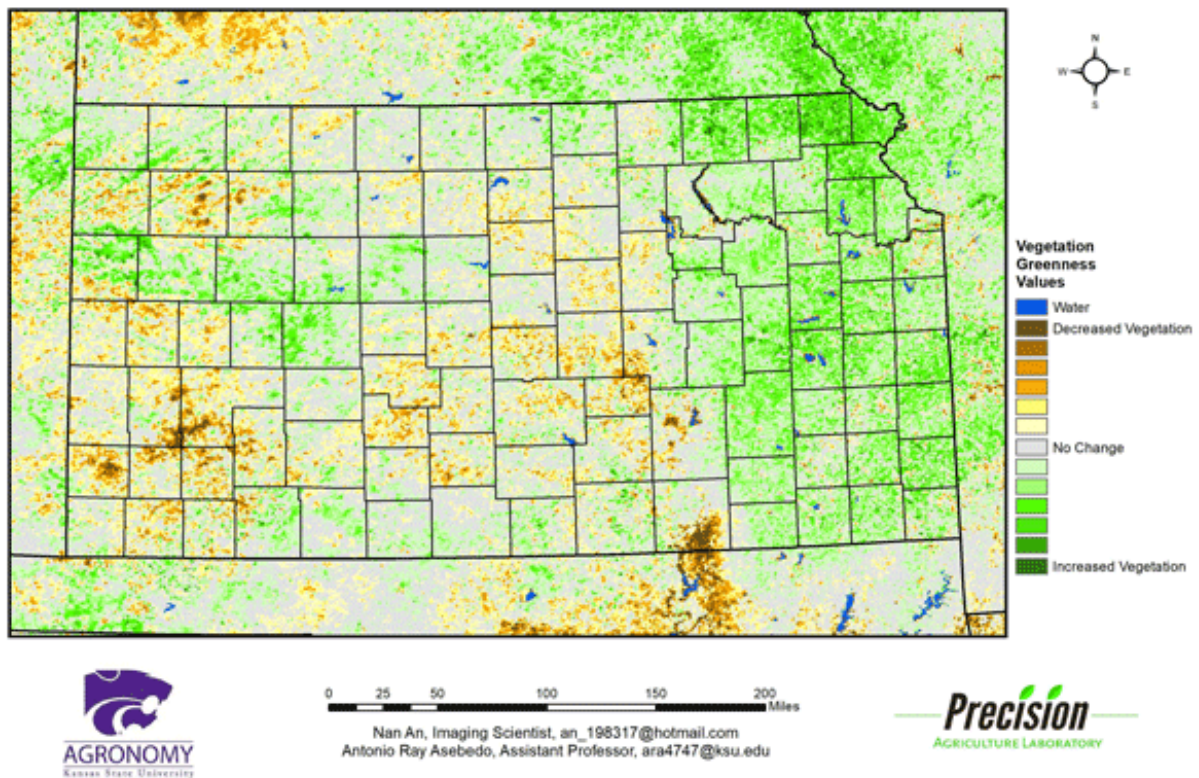


**Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for June 27 – July 3, 2017 from K-State’s Precision Agriculture Laboratory shows the greatest change in vegetative activity is in the Flint Hills area. Rainfall and temperatures have been favorable in the area, where western Kansas has been drier than this time last year.**



## Kansas Vegetation Condition Comparison

Late-Jun/Early-Jul 2017 compared to the 28-Year Average for Late-Jun/Early-Jul



**Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for June 27 – July 3, 2017 from K-State's Precision Agriculture Laboratory much of the state has close to average vegetative activity. The wetter-than-normal weather has favored vegetative growth along the Smoky Hill River Valley in northwest Kansas.**

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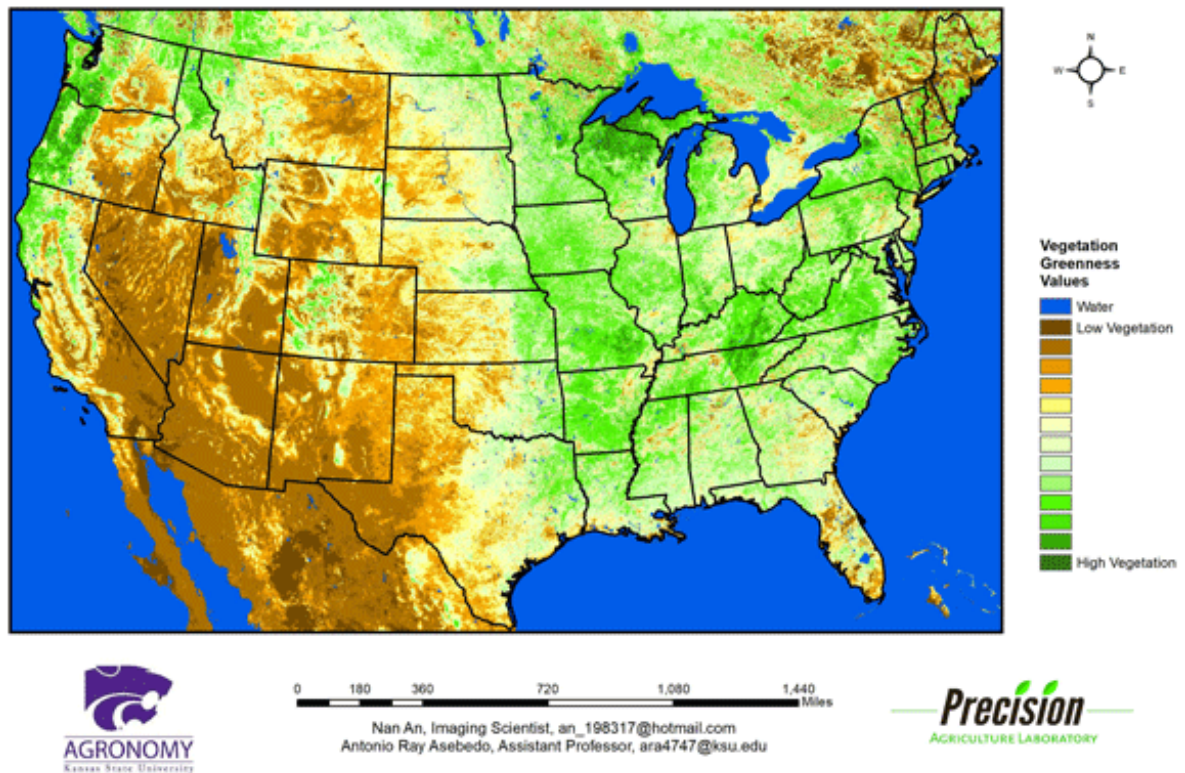
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## Continental U.S. Vegetation Condition

Period 27: 06/27/2017 - 07/03/2017



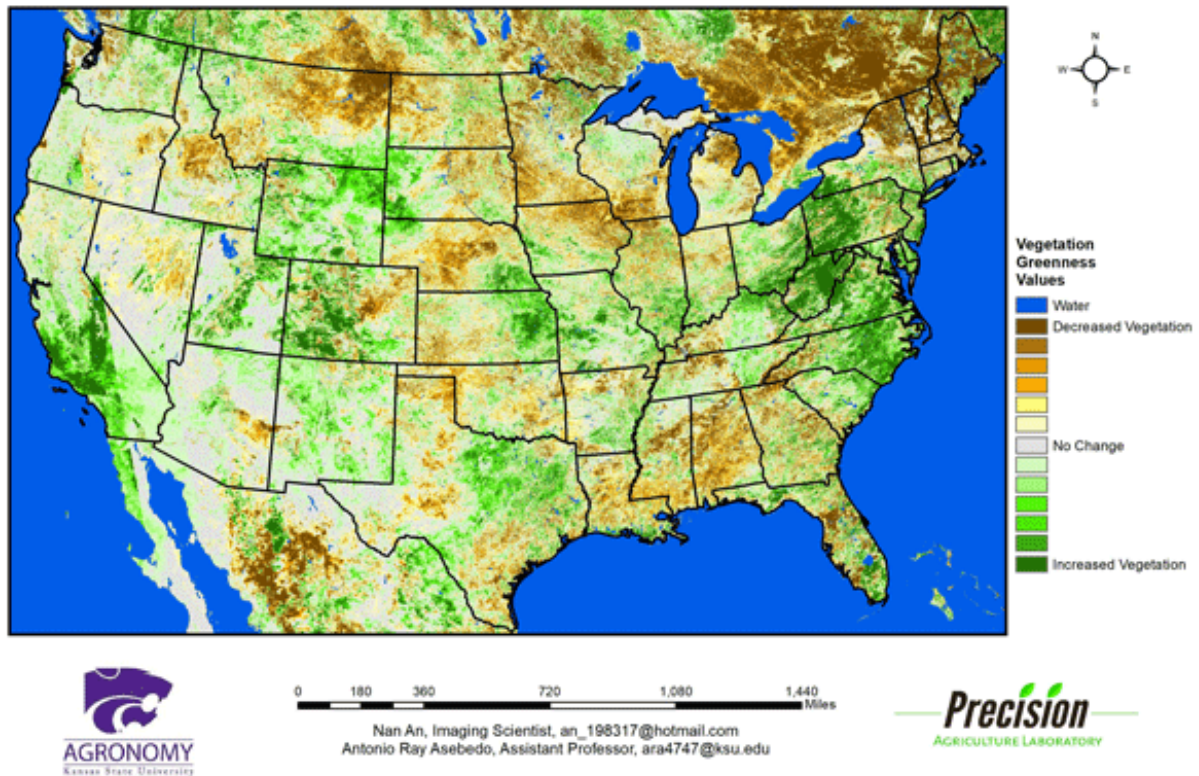
**Figure 4. The Vegetation Condition Report for the U.S June 27 – July 3, 2017 from K-State's Precision Agriculture Laboratory shows the area of highest NDVI values is centered in the Midwest, particularly in southern Missouri, central Kentucky, and central Tennessee. A second area of higher vegetative activity is visible along the West Coast, where the wet winter continues to benefit vegetative growth. Extremely low NDVI values highlight the severe drought in eastern Montana and western South Dakota.**

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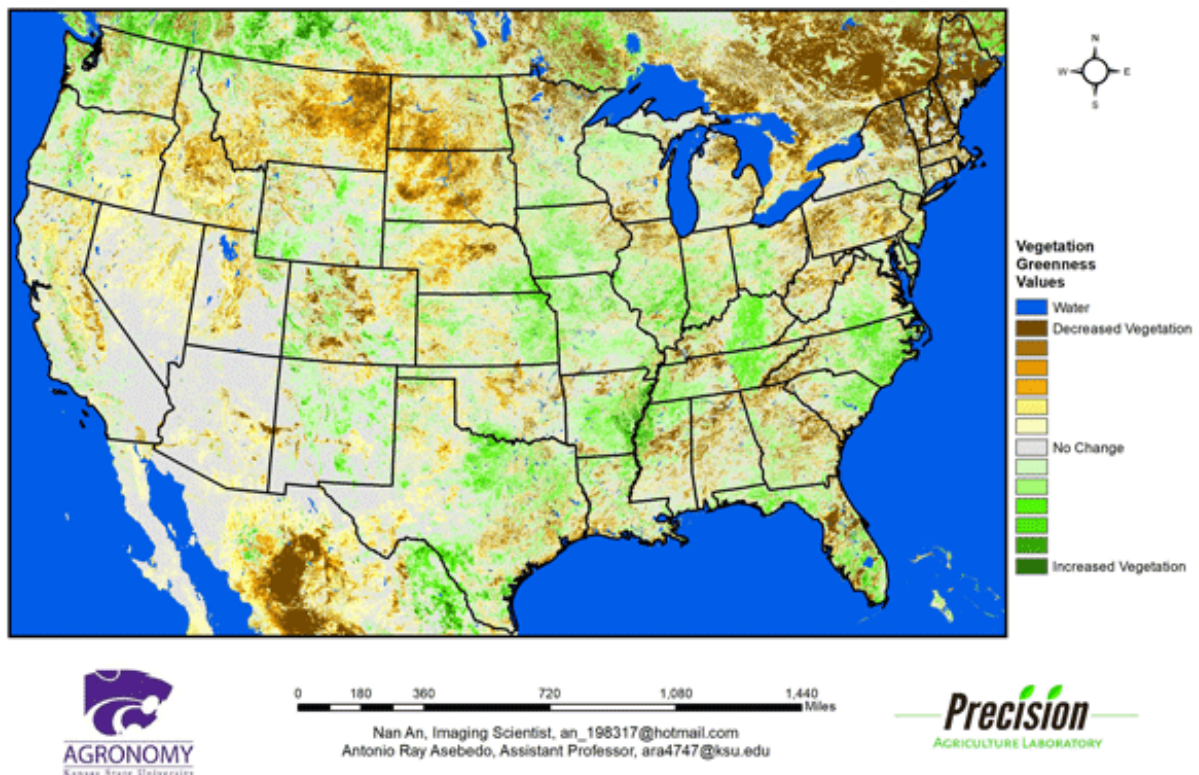
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Continental U.S. Vegetation Condition Comparison  
Late-Jun/Early-Jul 2017 Compared to Late-Jun/Early-Jul 2016



**Figure 5. The U.S. comparison to last year at this time for June 27 – July 3, 2017 from K-State's Precision Agriculture Laboratory shows the impact that the split in moisture conditions has caused this year. Much lower NDVI values are visible in eastern Montana and the Dakotas, where drought is severe. In contrast, Wyoming, western Colorado, and Utah have much higher NDVI values than last year at this time.**

Continental U.S. Vegetation Condition Comparison  
Late-Jun/Early-Jul 2017 Compared to 28-year Average for Late-Jun/Early-Jul



**Figure 6. The U.S. comparison to the 27-year average for the period of June 27 – July 3, 2017 from K-State’s Precision Agriculture Laboratory shows an area of below-average photosynthetic activity in upper New England, where continuing storm systems and cloud cover have masked vegetative activity. Drought impacts in the Northern Plains are visible as much lower NDVI values as well. In Colorado, parts of Idaho, and the Sierra Nevada of California, the below-average NDVI values are due to the lingering snowpack from an epic winter snow total.**

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