



**K-STATE**  
Research and Extension

## Extension Agronomy

# eUpdate

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*10/28/2016*

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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## 1. Controlling annual weeds with fall-applied herbicides ahead of corn and sorghum

With row crop harvest well underway, it's time to start planning your fall herbicide applications to control winter annual broadleaf weeds and grasses ahead of grain sorghum or corn. Fall applications during November can greatly assist control of difficult winter annuals and should be considered when performance of spring-applied preplant weed control has not been adequate.

Henbit and maretail frequently are some of the most troublesome weeds we try to manage with these fall herbicide applications.

Fall applications have another side-benefit. While it is always important to manage herbicide drift, herbicide applications made after fall frost have less potential for injury to what are normally sensitive targets.

There are several herbicide options for fall application. Using residual herbicides for weed control can be very beneficial. Atrazine is among the lowest-priced residual herbicides. However, atrazine will lock the grower into either planting corn or sorghum the following spring, or leaving the land fallow during the summer and come back to winter wheat in the fall.

Atrazine is labeled in Kansas for fall application over wheat stubble or after fall row crop harvest any time before December 31, as long as the ground isn't frozen. Consult the atrazine label to comply with maximum rate limits and precautionary statements when applying near wells or surface water. No more than 2.5 lbs of atrazine can be applied per acre in a calendar year on cropland.

One half to two pounds (maximum) per acre of atrazine in the fall, tankmixed with 1 to 2 pints/acre of 2,4-D LV4 or 0.67 to 1.33 pints/acre of 2,4-D LV6, can give good burndown of winter annual broadleaf weeds -- such as henbit, dandelion, prickly lettuce, Virginia pepperweed, field pansy, evening primrose, and maretail. In addition atrazine can control small, non-tillered winter annual grasses. Atrazine's foliar activity is enhanced with crop oil concentrate, which should be included in the tankmix. Winter annual grass control with atrazine is discussed below.

Atrazine residual should control germinating winter annual broadleaves and grasses. When higher rates of atrazine are used, there should be enough residual effect from the fall application to control early spring-germinating summer annual broadleaf weeds such as kochia, common lambsquarters, wild buckwheat, and Pennsylvania smartweed -- unless the weed population is triazine-resistant. The graphs below show the residual control effects of early December herbicide applications for kochia control ahead of corn and sorghum planting. One pound of atrazine provided 100% control of kochia at the March 26 evaluation. Additional tankmix partners extended residual kochia control.

# Kochia control with Late Fall Herbicides.

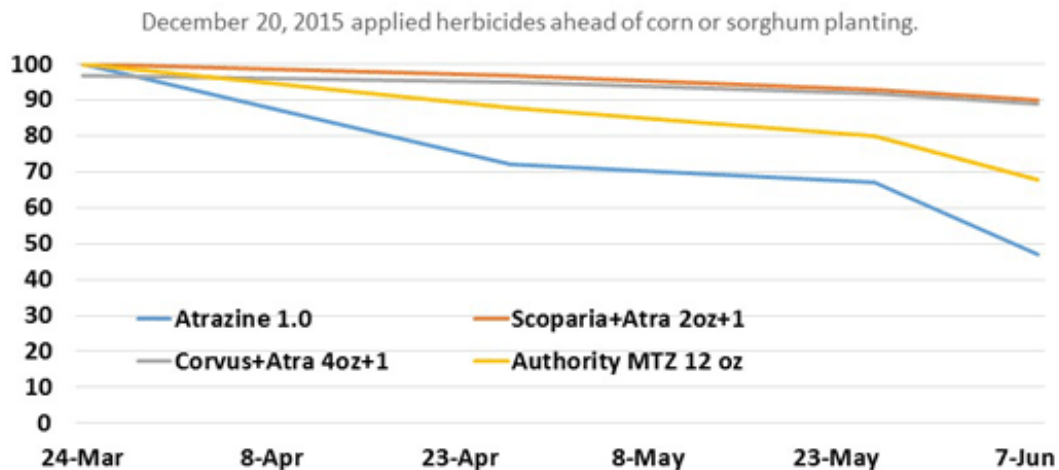


Figure 1. K-State trial measuring kochia control with late-fall herbicide applications. Source: Curtis Thompson, K-State Research and Extension.

Marestail is an increasing problem in Kansas that merits special attention. Where corn or grain sorghum will be planted next spring, fall-applied atrazine plus 2,4-D or dicamba have effectively controlled marestail rosettes, and should have enough residual activity to kill marestail as it germinates in the spring. Atrazine alone will not be nearly as effective postemergence on marestail as the combination of atrazine plus 2,4-D or dicamba. Sharpen can be very good on marestail, but should be tankmixed with 2,4-D, dicamba, atrazine, or glyphosate to prevent regrowth.

If the spring crop will be corn, other residual herbicide options include ALS herbicides such as Autumn Super or Basis Blend. ALS-resistant marestail will survive an Autumn Super or Basis Blend treatment if applied alone. For burndown, producers should mix in 2,4-D, dicamba, and/or glyphosate. Aim + 2,4-D or Rage D-Tech are additional herbicide options for fall application with only the 2,4-D component providing a very short residual. The options discussed in this paragraph would allow a grower to change plans and plant soybean if desired.

Winter annual grasses can be difficult to control with atrazine alone. Success depends on the stage of winter annual grass growth. For downy brome control, 2 lbs/acre of atrazine plus crop oil concentrate (COC) has given excellent control, whereas 1 lb/acre has given only fair control. Volunteer wheat and brome species that have tillered and have a secondary root system developing

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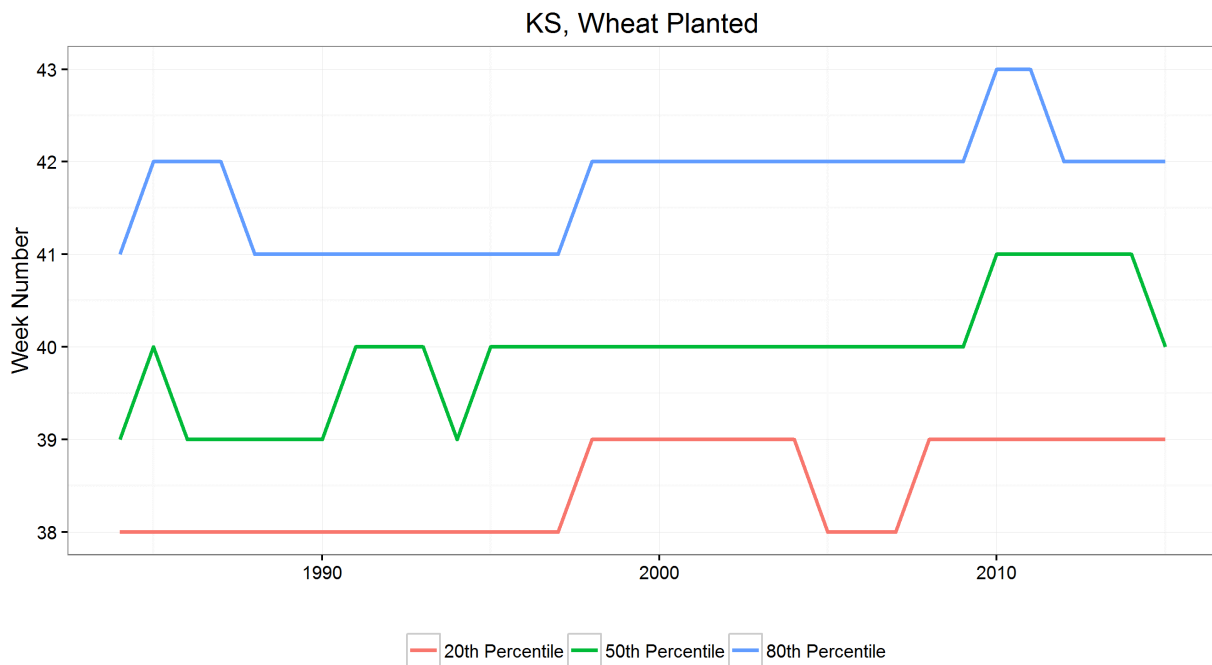
will likely not be controlled even with a 2-lb rate. Adding glyphosate to atrazine will ensure control of volunteer wheat, annual bromes, and other winter annual grassy weeds. Atrazine antagonizes glyphosate, so if the two are used together, a full rate of glyphosate (0.75 lb ae) is recommended for good control. The tankmix should include AMS.

Where fall treatments control volunteer wheat, winter annuals, and early-emerging summer annuals, producers should then apply a preemerge grass-and-broadleaf herbicide with glyphosate or paraquat at corn or sorghum planting time to control newly emerged weeds. Soils will be warmer and easier to plant where winter weeds were controlled in fall.

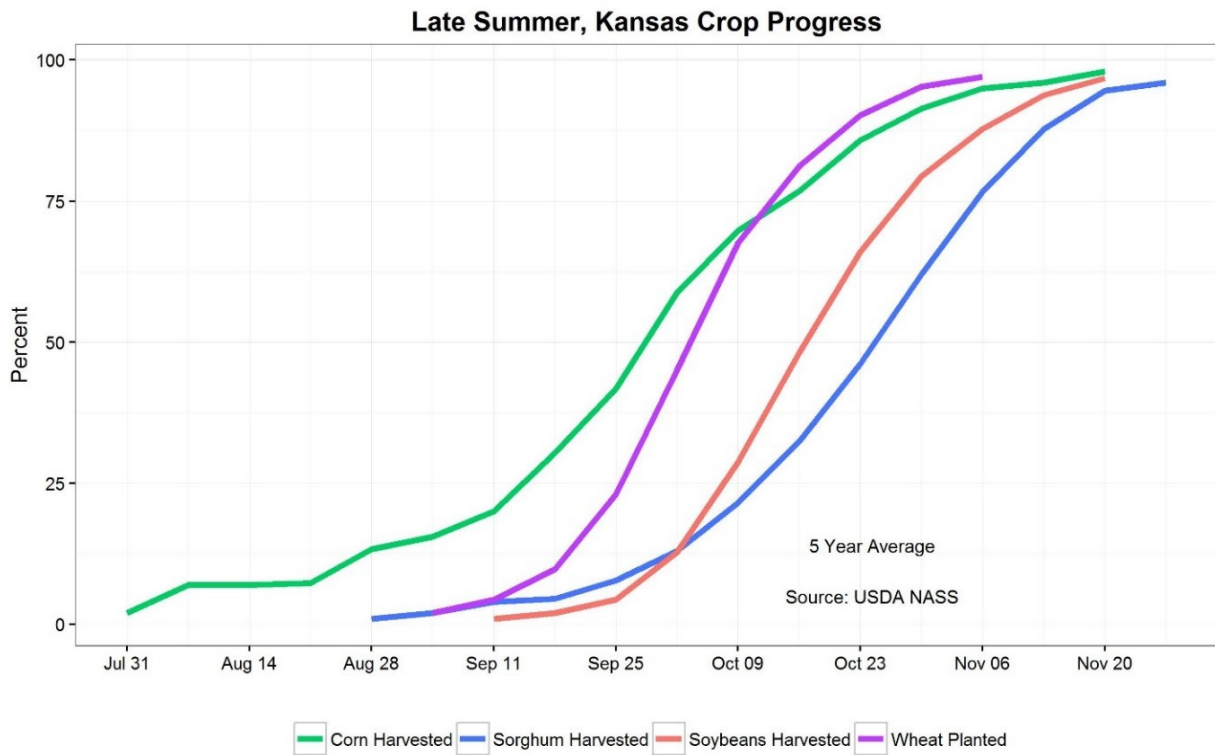
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## 2. Management adjustments when sowing wheat late

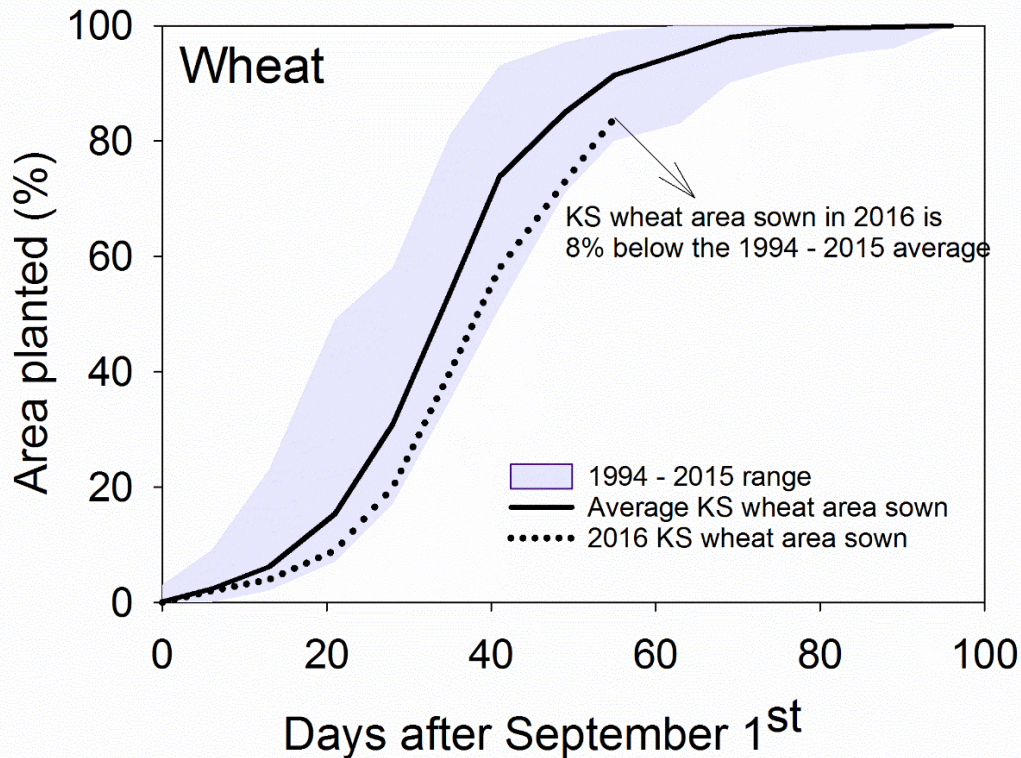
More than 80% of Kansas wheat should have been planted by this time of the year (Figure 1, week 43). However, some producers may have delayed planting for different reasons, including harvesting a summer crop during late October (Figure 2), or waiting for significant precipitation to occur. This last reason is particularly true for southwest Kansas, a portion of the state where no significant precipitation occurred in the last month or more. As a result, wheat planting in the state is slightly behind the 1994-2015 average for this time of year according to the USDA-NASS crop progress reports (Figure 3).



**Figure 1. Five-year moving average of the week when wheat planting progress met the 20th, 50th, and 80th percentiles. Wheat planting progress has been relatively stable over the years, with a slight shift for later planting in the magnitude of approximately a week in recent years as compared to late 1980's. The current week of Oct. 28 is week number 43, meaning that the 80<sup>th</sup> percentile of wheat area sown should have been achieved by the previous week.**



**Figure 2. Nearly all Kansas wheat farmers also grow one or more summer crops. Statewide, wheat planting typically begins after corn harvest begins but before soybean and grain sorghum harvest begins. However, wheat planting typically overlaps the harvest of the summer crops, and depending upon the harvest progress of the other crops wheat planting may be delayed due to farm equipment and labor being allocated to other cropping activities.**



**Figure 3. Wheat sowing progress in Kansas during 2016 as compared to the 1994 – 2016 average and range. Wheat area sown in the current year is slightly behind the long-term average, but still within the range observed in the period. Graph based on USDA-NASS crop report of progress as of Oct. 24, 2016. For updated versions of graphs presenting this information interactively, please visit: <http://www.agmanager.info/machinery/crop-progress-charts#planting-progress>**

Planting wheat in early November is within the acceptable range in southeast and far south central Kansas. In other areas of the state, this is later than desirable, and later than the cutoff date for full crop insurance benefits. Although good yields may still be reached when wheat is planted outside the optimal planting window, late-planted wheat is often subjected to colder fall temperatures and has less time to tiller prior to winter dormancy, which can reduce wheat yield potential and increase the risks of winter injury. Under these circumstances, some management adjustments can be made to try to compensate for the consequences of late planting:

#### **Increase seeding rate**



Late-planted wheat tends to produce fewer tillers during the fall than wheat planted at the optimal time. Fall tillers are generally more productive than spring tillers, contributing more to the crop's yield potential. Therefore there is a need to compensate for the reduced tillering by increasing seeding rates and adding extra seed per row foot. Wheat seeding rates for Kansas vary depending on the precipitation zone, and increase from west to east (Table 1). Likewise, for every week planting is delayed from the end of the optimal planting date range, seeding rates should be increased by about 150,000 – 225,000 seeds per acre (or 10 to 15 lb/acre) in western Kansas, or 225,000 – 300,000 seeds per acre (15 – 20 lb/acre) in eastern Kansas. Final seeding rate should not be above 90 pounds per acre in western Kansas and 120 pounds in eastern and central Kansas for grain-only wheat production.

**Table 1. Seeding rates for different Kansas regions when planted during optimum planting dates and in grain-only systems. Upwards adjustments to these rates are needed when planting wheat late.**

Region within Kansas	Seeding rate for grain-only wheat production, assuming optimum planting date			
	seeds/acre		seeds/sq. ft.*	
	Min.	Max.	Min.	Max.
Western	750,000	900,000	17	21
Central	900,000	1,125,000	21	26
Eastern	1,125,000	1,350,000	26	31
Irrigated	1,200,000	1,500,000	28	34

\* To determine row length needed for one square foot based on row spacing, divide 12 by the row spacing of your field. For example, if row spacing is 7.5 inches,  $12/7.5 = 1.6$  feet, or 19.2 inches of row are needed to be equivalent to one square foot.

### **Maintain the optimal planting depth (1 to 1.5 inch deep)**

Wheat needs at least 4-5 leaves and 1-2 tillers prior to winter dormancy for maximum cold tolerance. Late-planted wheat will most likely have fewer tillers and leaves than wheat planted at the optimal timing, and therefore will be more susceptible to winter kill. It is important to plant wheat at the normal planting depth (1 to 1.5 inches below the soil surface) to ensure good root development and anchorage, as well as good crown insulation by the soil during the winter, increasing the chances of winter survival. Shallow-planted wheat is at greater risk of winter injury. If the seed is placed too deeply, it may not have enough vigor in cold soils to emerge well.

### **Place starter phosphorus (P) fertilizer with the seed**

Phosphate-based starter fertilizer promotes early-season wheat growth and tillering, which can help

compensate for the delayed sowing date. Additionally, P is less available under colder soil temperatures, which can result in P deficiency under cold weather conditions. When planting late, producers should strongly consider using about 20-30 lbs/acre of P fertilizer directly with the seed, regardless of soil P levels. This placement method is more effective at that time of year than other application methods. The later the planting date, the more fall root development is slowed. The closer the fertilizer is to the seed, the sooner the plant roots can get to it.

### **Use fungicide seed treatment or plant certified seed**

Late-planted wheat is sown into colder soils, which generally increases the time needed for germination and emergence to occur. As a consequence, there is increased potential for seed and soil borne diseases that affect seedlings and early-season wheat development. Fungicide seed treatment can protect the seed and seedling during the extended time it is subjected to potential seedling diseases, improving stand establishment under poor growing conditions. It is important that the seed treatment thoroughly coat the seeds to ensure good protection. For fungicide seed treatment options, please refer to the most current version of K-State fungicide seed treatment chart available at: <https://www.bookstore.ksre.ksu.edu/pubs/MF2955.pdf>

### **Variety selection**

It is probably too late to make any changes as far as which wheat variety to plant this fall. However, a few points to consider when it is known that wheat will be planted late (e.g. when planning to sow wheat following soybeans) are tillering ability and maturity. A variety that has good tillering ability may offset some of the consequences of late planting, as it might still be able to produce one or two tillers during the fall whereas a low-tillering variety may produce none. Also, late-planted wheat is typically behind in development going into the winter, which might translate into slower development in the spring. This delay can result in plants being exposed to moisture stress and especially heat stress during grain filling, reducing the duration of the grain filling period. Thus, selecting an early-maturity variety with good yield potential may offset to some extent the consequences of late planting by decreasing the chances of a grain filling period subjected to warmer temperatures.

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### 3. Late-season management decisions for alfalfa

In some areas of Kansas, alfalfa may still be producing growth. This creates a dilemma for producers in need of forage, or for those who want to maximize profits from one last cutting. Should you cut it now or just before the first killing freeze (24 to 26 degrees) is forecast to get as much productivity as possible – or wait until right after the first killing freeze?

At this point in the year, the best approach is to wait until right after the first killing freeze, before too many of the leaves have dropped. The timing of the last cutting can impact the productivity of the stand in the following year.

The agronomics of the question are clear. At this stage of the growing season, alfalfa plants need to store enough carbohydrates to survive the winter. If root reserves are not replenished adequately before the first killing freeze in the fall, the stand is more susceptible to winter damage than it would be normally. That could result in slower greenup and early growth next spring.

The last cutting, prior to fall dormancy, should be made based on expected crown regrowth rather than one-tenth bloom because of the decreasing photoperiod. The last cutting should be made so there will be 8 to 12 inches of foliage, or 4 to 6 weeks of growth time, before the first killing freeze. This should allow adequate time for replenishment of root reserves.



**Figure 1. Alfalfa stand with approximately 12 inches of top growth prior to winter dormancy.**

**The last cut in this stand was performed early September, and this photo was taken late October. This stand will be hayed immediately following the first killing frost. Photo by Romulo Lollato, K-State Research and Extension.**

For northern areas of the state, particularly northwest, late September should be the target date for the last cutting before dormancy. The last week of September should be the cutoff date for southwest Kansas. The first week of October is the cutoff for southeast Kansas. In other words, it's too late now to make the last cutting until after a killing freeze occurs.

Making a cutting now, before a killing freeze occurs, could initiate regrowth, which will reduce root reserves during a critical time. About the worst thing that could happen to an alfalfa stand that is cut in late-October would be for the plants to regrow about 3 to 6 inches and then get a killing frost. In that scenario, the root carbohydrate reserves would be at a low point. That could hamper greenup next spring.

After a killing freeze, the remaining forage (if any) can be hayed safely. However, the producer should act quickly because the leaves will soon drop off.

Late fall is a great time of the year to soil sample alfalfa ground. This timing allows for an accurate assessment of available soil nutrients and provides enough time to make nutrient management decisions before the crop starts growing in the spring. Soil tests of most interest include pH, phosphorus, and potassium, and to a lesser extent sulfur and boron. When sampling for immobile nutrients, sampling depth should be six inches, while mobile nutrients (sulfur) should be sampled to 24 inches.

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#### 4. Field Pea Production Workshop, Nov. 4 in Culbertson, Neb.

A Field Pea Production Workshop will be held on Friday, Nov. 4 in Culbertson, Neb., at the Ag Complex Building on Railroad Street. Registration begins at 8:30 a.m. CDT. The workshop will end at 3 p.m.

The workshop is hosted by K-State Research and Extension, the University of Nebraska-Lincoln Extension, Colorado State University Extension, the University of Wyoming, and USDA-SARE (Sustainable Agriculture Research & Education).

The agenda:

8:30 a.m.: Welcome and registration

9-9:30 a.m.: Market updates and sponsor/exhibitor updates

Ben Dutton – Data and trends that favor the production of field peas

9:30-10:45 a.m.: Why grow field peas?

Strahinja Stepanovic – Outline and rationale

Rodrigo Werle – Soil nutrients, microbial activity, and soil infiltration

Julie Peterson – Beneficial insects

Tony Adesemoye – Beneficial microbes and diseases to watch for

Chuck Burr and Daran Rudnick – Water use, yield, yield quality, and economics

Lucas Haag – Field pea as a fallow alternative

Break: Sponsors/exhibitors

11 a.m.-Noon: Growing peas, Part 1

Dipak Santra – Field pea varieties for Nebraska

Lucas Haag – Kansas variety testing and seeding rate studies

Rodrigo and Strahinja – Seeding rates, seeding depth, and inoculants

Cody Creech – Herbicide options in field peas

Lunch: Nutrition facts about peas

12:45-2 p.m.: Growing peas, Part 2

Ron Meyer – Peas grown for forage

Carrie Ann Eberle – Winter pea performance in Wyoming

Farmer panel

2-3 p.m.: Hands-on exercise

Matt Stockton – Selecting the most profitable crop rotation

Registration is free. Participants should register by Oct. 30. Call Nebraska Extension, Hitchcock County at 308-334-5666 or email Strahinja Stepanovic, [sstepanovic2@unl.edu](mailto:sstepanovic2@unl.edu)

Online registration is available at:

<http://cropwatch.unl.edu/registration-form-nov-4-unl-field-pea-production-workshop>

Sponsors include Great Northern Ag, Pulse USA, Gaviolon, AgriForce Seed, Prairie Sky Seed, Luhrs Certified Seed, Green Cover Seed, and Arrow Seed.

For more information, contact Lucas Haag, Northwest Area Crops and Soils Specialist at [lhaag@ksu.edu](mailto:lhaag@ksu.edu)

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## 5. Cover Crop Road Show planned Nov. 17 in southwest Kansas

Producers can get an up-close look and discussion about cover crops in several southwest Kansas settings at K-State Research and Extension's Cover Crop Road Show, Thursday, Nov. 17. The U.S. Department of Agriculture-Natural Resource Conservation Service is the tour's co-sponsor.

The tour starts near Jetmore at the Brit Hayes Farm and ends with lunch and discussion in Ford.

The goal of the program is to foster dialogue between producers, university researchers and specialists, government officials, and industry.

The schedule includes:

8:30-9 a.m. - Registration – Brit Hayes Farm, 22918 N. Hwy 156, Jetmore.

9-10 a.m. – Cover Crops in a Cow-Calf System, including Q&A and presentation on cover crop choices – Brit Hayes Farm.

10:30-11:30 a.m. – Cover Crops in a Stocker System, including Q&A and presentation on maximizing the benefit of cover crops – Dennis Bradford Farm, 28326 S.E. D. Rd., Jetmore.

Noon-1 p.m. – Grazing Cover Crops, including a Q&A and presentation on the multiple reasons for using cover crops – 128 Rd. & Warrior Rd., Bucklin.

1-2 p.m. – Lunch and discussion – The Blue Hereford, 807 Main, Ford.

Participants are asked to register by Nov. 11 at [www.southwest.k-state.edu](http://www.southwest.k-state.edu) or contact Norma Cantu at [cantu@ksu.edu](mailto:cantu@ksu.edu) or 620-275-9164.

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## 6. Comparative Vegetation Condition Report: October 18 - 24

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. 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.

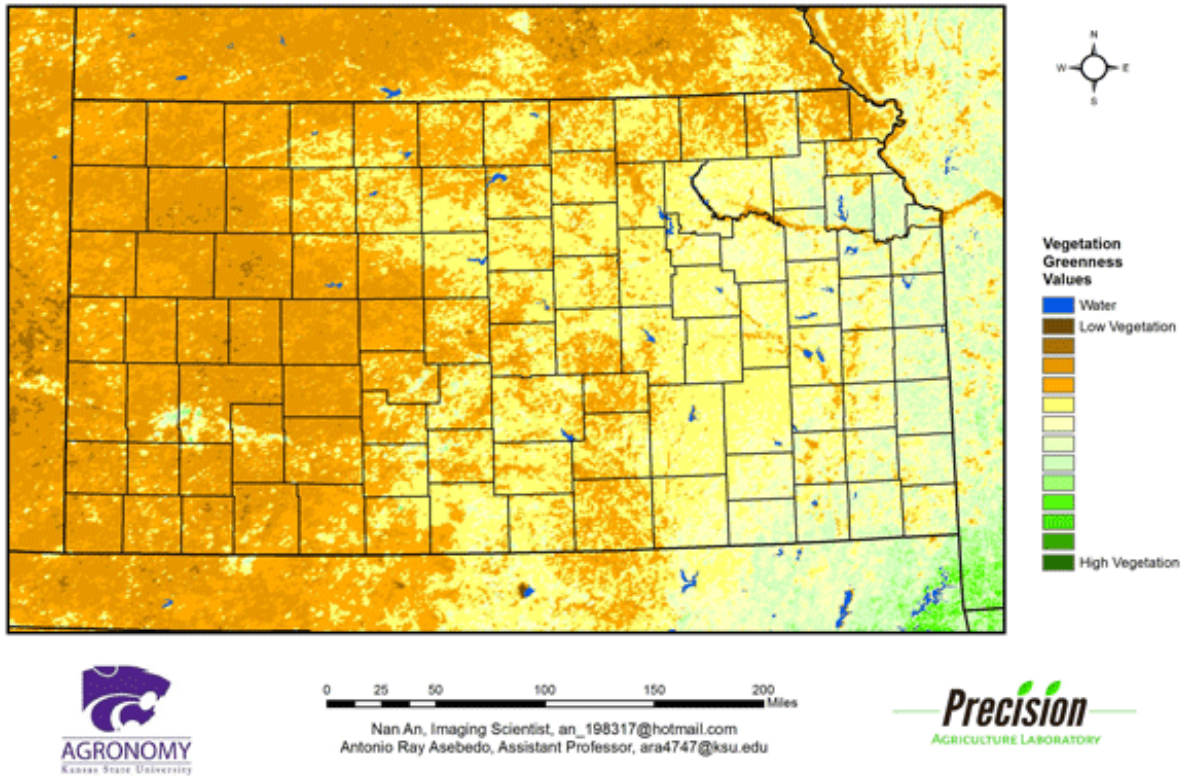
These improvements increase sensitivity for capturing more variability in plant biomass and photosynthetic capacity. However, the same format as the previous versions of the VCR maps was retained, thus allowing the transition to be as seamless as possible for the end user. For this spring, it was decided 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:



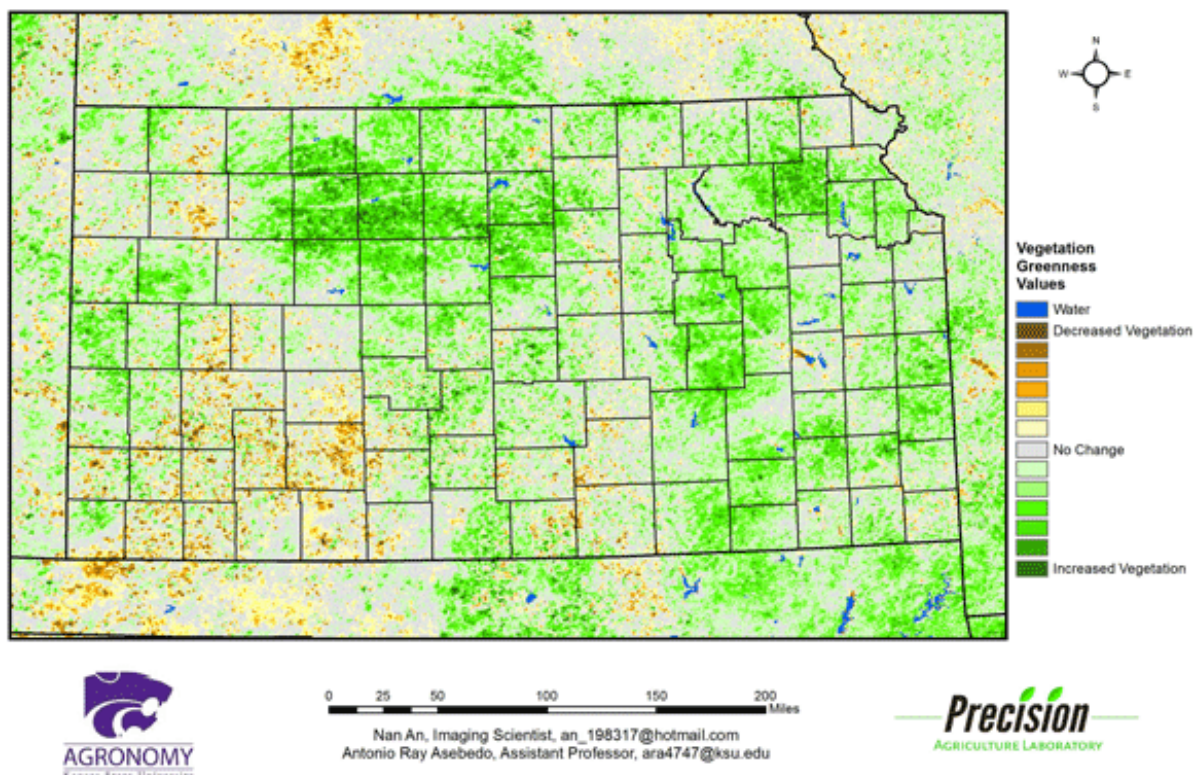
# Kansas Vegetation Condition

Period 43: 10/18/2016 - 10/24/2016



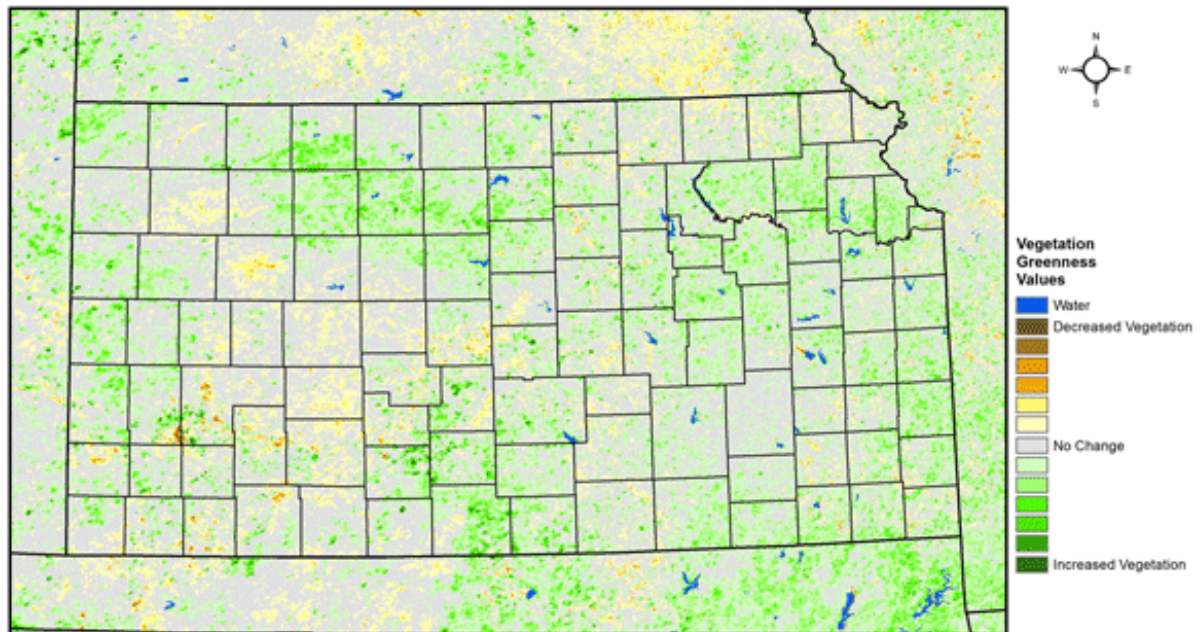
**Figure 1. The Vegetation Condition Report for Kansas for October 18 – October 24, 2016 from K-State’s Precision Agriculture Laboratory shows only light photosynthetic activity. The growing season is almost over and much of the vegetation is moving into dormancy.**

## Kansas Vegetation Condition Comparison Late-October 2016 compared to the Late-October 2015



**Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for October 18 – October 24, 2016 from K-State’s Precision Agriculture Laboratory shows the largest area of higher vegetative activity is in north central Kansas. Pockets of delayed development continue to be the major contributor to this higher vegetative activity, although emergence of the winter wheat in west central Kansas is visible. Slow establishment of winter wheat in the Southwest into the South Central Divisions is visible as reduced NDVI values there.**

Kansas Vegetation Condition Comparison  
Late-October 2016 compared to the 27-Year Average for Late-October



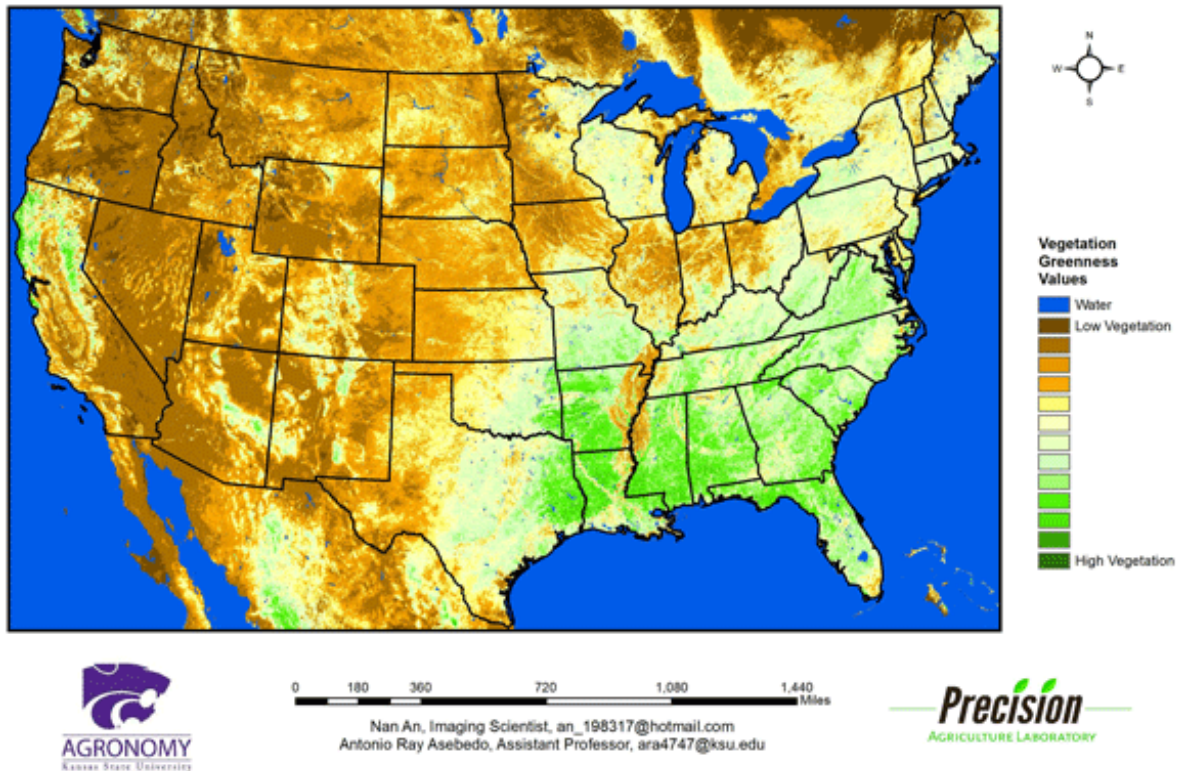
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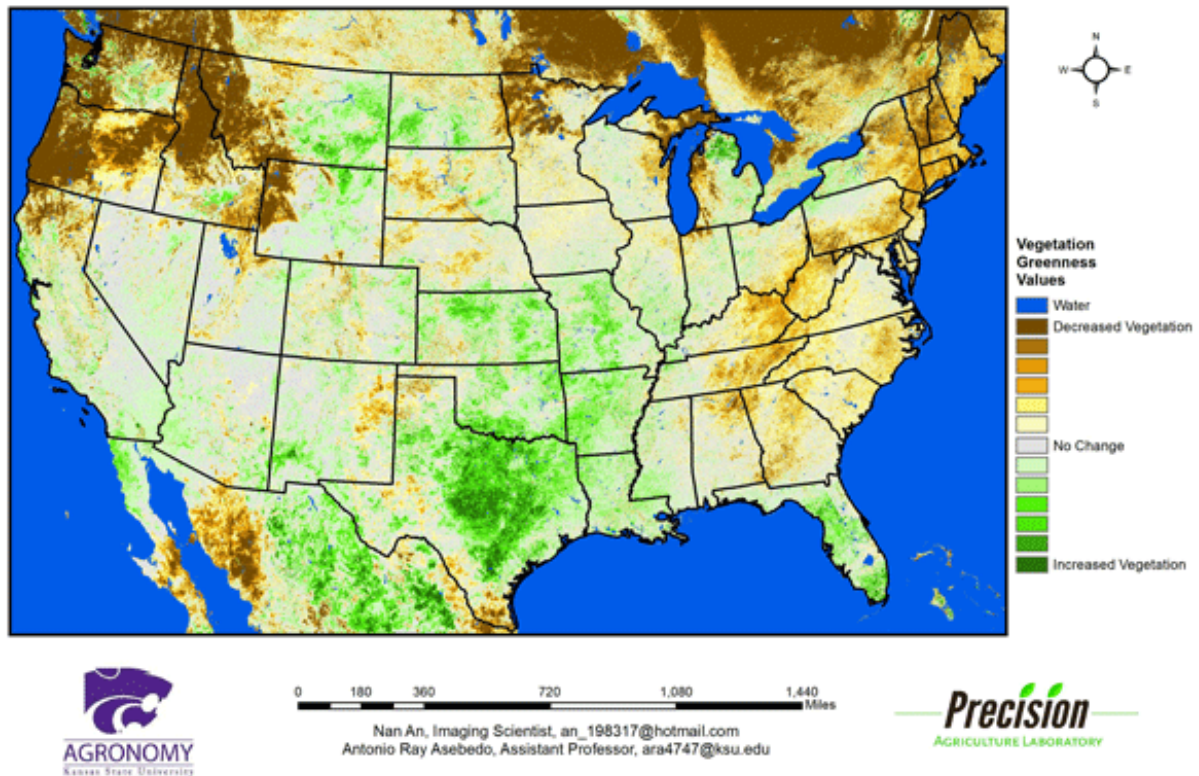
**Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for October 18 – October 24, 2016 from K-State's Precision Agriculture Laboratory shows much of the state has close-to-average vegetative activity. Below-average values are visible in Thomas, Gove, and Ness counties, as abnormally dry conditions continue to expand in the west.**

Continental U.S. Vegetation Condition  
Period 43: 10/18/2016 - 10/24/2016



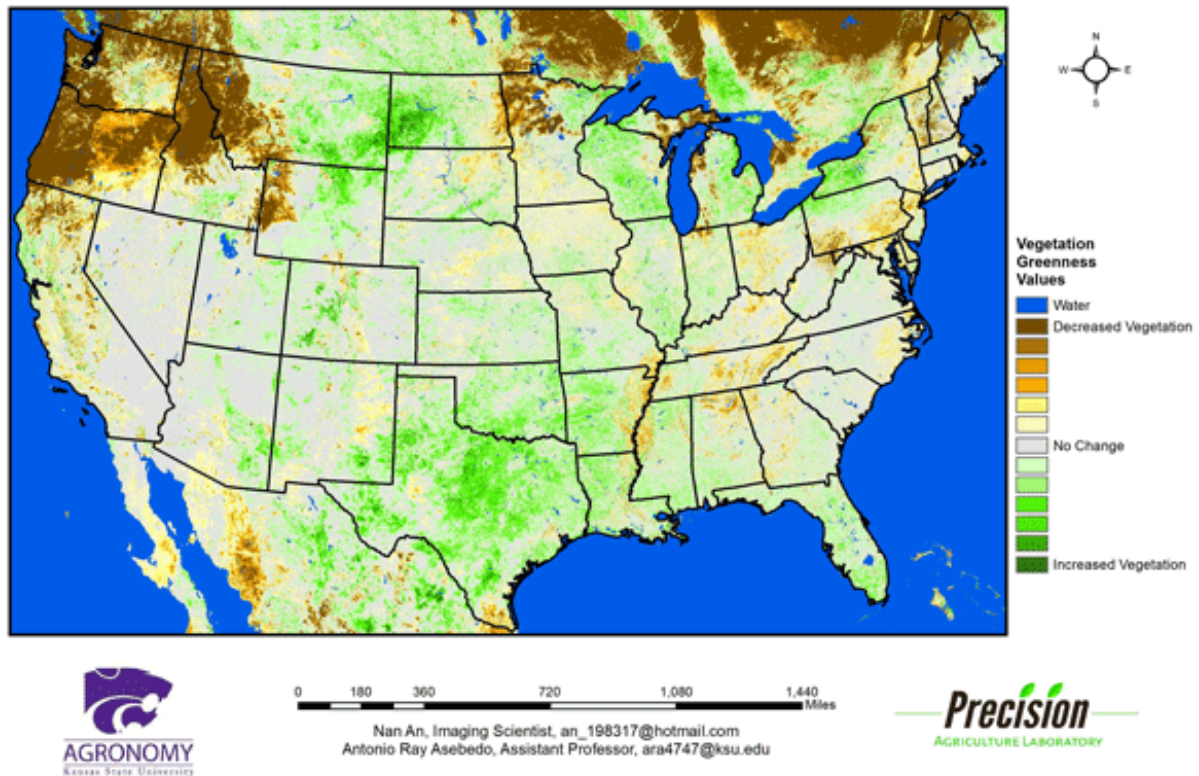
**Figure 4. The Vegetation Condition Report for the U.S for October 18 – October 24, 2016 from K-State’s Precision Agriculture Laboratory shows high NDVI values along northern California where mild temperatures and rains have extended the growing season. Low NDVI values are visible in the Corn Belt and along the Mississippi River Valley, where crop maturity is slightly ahead of average.**

Continental U.S. Vegetation Condition Comparison  
Late-October 2016 Compared to Late-October 2015



**Figure 5. The U.S. comparison to last year at this time for October 18 – October 24, 2016 from K-State’s Precision Agriculture Laboratory shows that higher NDVI values in the Southern Plains where warmer-than-normal temperatures continue to be an issue. In the Southeast, lower activity is visible as this region missed out on the recent tropical systems and drought continues to intensify. The much lower NDVI values in the Pacific Northwest are due to persistent cloud cover.**

Continental U.S. Vegetation Condition Comparison  
Late-October 2016 Compared to 27-year Average for Late-October



**Figure 6. The U.S. comparison to the 27-year average for the period October 18 – October 24, 2016 from K-State’s Precision Agriculture Laboratory shows below-average NDVI values in the Pacific Northwest. Persistent rains and cloud cover are the major factors in this area. The deep South continues to have persistent drought conditions, but as photosynthetic activity is typically reduced in that region during this period, the low NDVI values due to the drought are not especially lower than the long-term average. In other seasons, the low NDVI values caused by the drought would show on the map as an area of below-average activity.**

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