Issue 550

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eUpdate

02/12/2016

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, Jim Shroyer, Crop Production Specialist 785-532-0397 jshroyer@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. First hollow stem update: February 12, 2016

Cattle should be removed from wheat pastures when the crop reaches first hollow stem (FHS, Figure 1). Grazing past this stage can severely affect wheat yields (for a full explanation, please refer to eUpdate article "Optimal time to remove cattle from wheat pastures: First hollow stem" in the Feb. 5, 2016 issue).

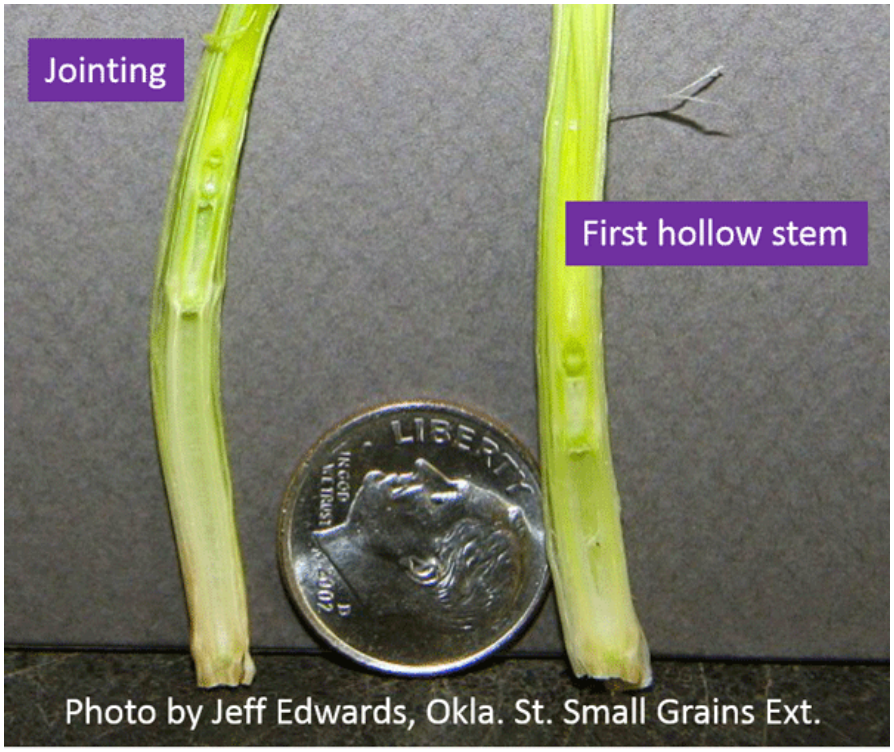

Figure 1. Comparison between wheat at jointing (plant on the left) and wheat at first hollow stem (plant on the right). Photo courtesy of Jeff Edwards, former Oklahoma State University Extension Wheat Specialist.

To screen for FHS during this important time in the growing season, the K-State Extension Wheat and Forages crew measures FHS on a weekly basis in 23 different commonly grown wheat varieties in Kansas. The varieties are in a September-sown replicated trial at the South Central Experiment Field near Hutchinson, in cooperation with Gary Cramer, Agronomist-in-Charge of the Field.

Ten stems are split open per variety per replication for a total of 40 stems monitored per variety. The average length of hollow stem is reported in Table 1. As of Feb. 12, all the monitored varieties have < 0.1 cm of hollow stem and therefore are far from achieving FHS, which occurs at 1.5 cm (about a half-inch). As with our report from last week, there was no separation between the growing point and the crown area in most varieties evaluated, indicating that the hollow stem did not begin to elongate at this point.

From a FHS perspective, producers grazing wheat in the south central region of Kansas do not have to worry about removing cattle from wheat pastures at this point, regardless of variety selection. Additionally, producers in this region need not to worry about early release from winter dormancy (early spring greenup) at this point. With the warm weather forecast for next week, though, it will be

important to keep checking this report in the next few issues of the Agronomy eUpdate as we monitor advances in hollow stem of wheat varieties.

Table 1. Length of hollow stem measured on Feb. 9, 2016 of 23 wheat varieties sown Sept. 26, 2015 near Hutchinson. The critical FHS length for purposes of cattle removal is 1.5 cm

Variety	Hollow stem length
	cm
1863	0.05
Bentley	0.01
Danby	0.03
Doublestop CL Plus	0.04
Duster	0.03
Everest	0.05
Gallagher	0.03
KanMark	0.06
LCS Chrome	0.01
LCS Mint	0.02
LCS Pistol	0.04
LCS Wizard	0.05
Overley	0.02
Ruby Lee	0.09
SY Flint	0.04
SY Wolf	0.04
T158	0.05
TAM 114	0.02
WB 4303	0.05
WB 4458	0.06
WB Cedar	0.07
WB Grainfield	0.04
WB Redhawk	0.04

The intention of this report to is provide producers a weekly update on first hollow stem of different wheat varieties in the current growing season. Producers should use this information as a guide, but it is extremely important to monitor FHS from an ungrazed portion of each individual wheat pasture

to take the decision of removing cattle from wheat pastures.

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2. Remediating soils affected by brine spills

Brine spills sometimes occur on agricultural lands, either from nearby oil and gas operations or some other cause. When a brine spill occurs, producers and landowners will need to report the spill, assess the impact of the spill, and find out what it will take to remediate the effects and return the soil to near-normal conditions.

Reporting a brine spill

The source of the brine determines which state agency needs to be contact to report the spill. The spiller/operator is responsible for reporting the spill and can use the 24/7 Kansas Spill Reporting hotline 785-291-3333 or contact the appropriate district office of the Kansas Corporation Commission (KCC) or the Kansas Department of Health and Environment (KDHE).

The KCC handles spills associated with past or present oil or gas lease (drilling, production, etc.) activity. Spill reporting requirements are as follows:

- If the spill has reached or threatens to reach surface water or threatens to impact ground water the operator must report the spill immediately upon discovery or knowledge [K.A.R. 82-3-603 (b) (1)].
- All other spills shall be reported no later than the next business day following the date of discovery or knowledge of the spill [K.A.R. 82-3-603 (b) (2)] except those exempt, very minor spills, that occur as a result of normal and prudent operations [K.A.R. 82-3-603 (b) (3)].
- The operator is also obligated to make a good faith effort to notify the landowner or owner's representative within five business days following the discovery or knowledge of any spills or escapes that are required to be reported [K.A.R. 82-3-603a (a)].

All other brine spills including those resulting from the off lease transport of brine produced as a result of oil and gas production are reported to the KDHE Bureau of Environmental Remediation via the 24/7 Kansas Spill Reporting hotline 785-291-3333

Landowners with questions or concerns about brine spills on oil and gas leases, or failure to be notified by a lease operator of a spill should contact their appropriate KCC district office (http://www.kcc.state.ks.us/contact.htm).

Recording the location

First, define the affected area, using a tape measure or by pacing. It's also a good idea to record the latitude and longitude coordinates for the spill. If the spill is large, multiple points could be recorded. A simple way to do this is by using the Google Maps app, which is free to download on smartphones. By placing your finger on the screen, you can drop a pin at your location, and then edit the label. For example, you could drop a pin and edit it to say "north edge of spill." That pin will be visible to you when you log in to Google Maps or Google Earth on your computer. You can also share that pin by email, text, etc. with others.

Soil sampling after a brine spill

Soil samples should be collected from affected and non-affected areas after a spill. For help with soil

sampling, you could contact your local Extension office, a crop consultant, or an environmental consultant. Local Extension offices have Agriculture and Natural Resource agents who are knowledgeable about how to collect proper soil samples, and they have access to soil probes, which can be lent out to landowners.

A good sampling strategy is to sample to a minimum depth of 12 inches, breaking the core into 0-6 and 6-12 inch segments (you'll want to take 2 buckets to the field, one where you can place the 0-6 and one for the 6-12 inch depth). Collect 10-15 cores, split them into the two depths, and composite the sample. Place the soil into a paper or plastic bag, and label the bag with the sampling location, depth sampled, and other pertinent information. Record the sample names on a laboratory submission form. Soil sample bags and KSU Soil Testing Laboratory submission forms are also available from your local Extension agent.

How many samples should be collected in a spill area? It depends on the size of the spill. If the affected area is 100 square feet on a flat area, one sample comprised of the 10-15 cores should be sufficient. If the spill affects thousands of square feet, and runs downslope, multiple soil samples might be needed.

Samples should also be collected from outside the spill area, but nearby, on a similar slope position. These will be used to determine the pre-spill soil properties.

Analyses to run on soil samples

The KSU Soil Testing Laboratory has a Salt Alkali package that measures the electrical conductivity, the exchangeable sodium percentage, and the soil pH. This determines if the soil is saline, sodic, or saline-sodic. For more details on testing, refer to https://webapp.agron.ksu.edu/agr_social/eu_article.throck?article_id=87

Table 1. Salt-affected soil classification

Classification	Electrical conductivity (EC) (mS/cm)	Soil pH	Exchangeable sodium percentage (ESP)	Soil physical condition
Saline	>4	<8.5	<15	Normal
Sodic (alkali)	<4	>8.5	>15	Poor
Saline-sodic	>4	<8.5	>15	Normal

After receiving lab data, the landowner can determine a course of action.

If the soil is saline: If the electrical conductivity values exceed 4 ms/cm, but the ESP is less than 15, the soil contains high levels of salts, which could be sulfates and/or chlorides of calcium and/or magnesium. Saline soils can be reclaimed by flushing with large amounts of high-quality (low salt) water. The leaching water requirements will be explained in more detail at the end of this article.

If the soil is saline-sodic or sodic: To improve the soil structure, the sodium needs to be replaced with calcium, and this is done with gypsum, $CaSO_4 \cdot 2H_2O$, which is very soluble. The rate of gypsum application is 1.7 tons gypsum per millequivalent (meq) of exchangeable sodium, which is provided

with the Soil Salt Alkali laboratory report. After the gypsum is added, large amounts of water will need to be added to flush out the salts. It's important in a saline-sodic soil to treat with gypsum prior to starting an aggressive leaching program, since the physical properties of a saline-sodic soil are generally good. If one cuts off the source of the salts and leaches the free salts from the soil first, the sodium in the soil will destroy the physical properties, making leaching extremely slow and difficult. So make sure for either a saline-sodic or a sodic soil to add gypsum before leaching.

Calculating leaching water requirements for saline soils

From the K-State Research and Extension publication, Managing Saline and Sodic Soils in Kansas, by Lamond and Whitney (1992), the following recommendation is often used: 8 to 10 inches of leaching water may be necessary to remove 70 percent of total salts for each 12 inches of soil to be leached.

Example:

Soil samples collected within a brine spill area had an average electrical conductivity (EC) of 24 mS/cm, receiving a salinity ranking of Very Excessive. The sample taken nearby outside the spill had an EC of 1.5 mS/cm, rated as Low Salinity.

Following the Lamond and Whitney approach:

If 8-10 inches of leaching water is applied to 1 foot of affected soil, that would reduce the EC from 24 to 7.2 mS cm^{-1} which is still Highly Saline.

If you applied another 8-10 inches of leaching water to that same foot of soil, the EC would now be 2.2 mS cm^{-1} which classifies as Moderately Saline.

If you applied another 8-10 inches of leaching water, you could reduce the EC to less than 1 mS cm^{-1} which would classify as having Low Salinity.

The leaching requirement, therefore, is 24-30 inches of water to leach the salts out of one foot of soil. It is recommended that the salts be leached out of the upper 2 feet of the soil profile, so in this example, 48-60 inches (4-5 feet) of leaching water should be applied. In wetter regions, the lower end of the range can be used, and in drier areas, the upper end of the range should be applied.

A second way to calculate the leaching water requirement is from the University of California-Davis publication, called Agricultural Drainage and Salinity by Hanson et al. (2006).

Equation:

Where: D_w = depth of water infiltrated (feet)

D_s = depth of soil to be reclaimed (feet)

k = 0.45 for organic soils, 0.30 for fine-textured soils, 0.10 for coarse-textured soils

EC_{ef} = final soil salinity desired

EC_{ei} = initial soil salinity

So to reduce the EC from 24 to 1.5 mS cm^{-1}, the water requirement for a fine-textured soil (such as a silty clay loam) would be:

Which equals 4.8 feet of water to reclaim one foot of soil, or 7.2 feet of water to reclaim two feet of soil.

Despite the fact that the two approaches give different values, they illustrate that a great deal of water must be applied to leach soluble salts from the upper two feet of the soil profile. To reiterate, these values were calculated for a silty clay loam soil, and using example laboratory data. Calculations must be performed using actual laboratory testing data, and using the correct k factor for the soil type. The greater the EC value, the more water is required. Soils that contain more clay will require more leaching water than a sandy soil.

For more information:

To report any kind of spill 24/7, contact the Kansas Spill Response Program at 785-291-3333
http://www.kdheks.gov/spill/

For more detailed information on saline and sodic soils, see K-State Extension publication MF-1022 at: http://www.ksre.ksu.edu/bookstore/pubs/MF1022.pdf

Clean up guidelines for brine spills:
http://www.kcc.state.ks.us/conservation/cleanup_brochure.htm

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3. Soil salinity problems in Kansas

Of all the soil-related problems for crop production in Kansas, one of the most potentially damaging for crops is high salinity. Fortunately, salinity problems affect a relatively small percentage of the total acres. The Arkansas River floodplain has the greatest concentration of salt-affected soils in Kansas.

In some cases, salinity problems occur because of a shallow water table and poor quality of the river water, as is the case with the Arkansas River floodplain. Other causes include soil formation from parent material high in soluble salts, poor quality irrigation water, excessive application rates of manure or other waste products, and spillage of brine water associated with oil production.

Some degree of salinity in the soil is normal, and even necessary because essential nutrients exist in the soil as part of the soluble salts. If soluble salt levels are too high, however, salt can reduce seed germination and plant growth. At this point, the soil is termed a "saline soil." This is sometimes confused with "sodic" soils. Sodic soils are those with excessive levels of exchangeable sodium, but low levels of total salts. Saline-sodic soils have both high salt levels and high exchangeable sodium. The key factors used to diagnose whether a soil is saline, sodic, or saline-sodic are: electrical conductivity of the soil; soil pH; and percent sodium saturation of the cation exchange capacity. The following table summarizes the important differences between saline, sodic and saline-sodic soils.

	Soil Conductivity Mmhos/cm	Soil pH	Exchangeable sodium content	Physical conditions
Saline Soil	Greater than 4.0	Less than 8.5	Less than 15%	Normal
Sodic soil	Less than 4.0	Greater than 8.5	Greater than 15%	Poor
Saline-sodic soil	Greater than 4.0	Less than 8.5	Greater than 15%	Normal

Saline and saline-sodic soils often have a white crust on the soil surface. Sodic soils usually have a brownish-black crust from the dispersion of organic matter.

When salt levels in the soil become too high, the osmotic pressure within the soil is increased to the point that soil water is held too tightly for plant roots to be able to absorb it. Most plants become stressed or die from lack of water uptake in a saline soil. Plant species vary markedly in their tolerance to salinity levels. Some species are quite tolerant, such as salt marsh grasses. Unfortunately, the major agronomic crops grown in Kansas are only moderately tolerant to salinity. Soybeans are slightly more sensitive than sorghum, corn, and wheat to salinity.

Measurement of soluble salt concentrations is normally made on a saturation paste by mixing just enough distilled water with the soil to totally saturate it. The specific conductance is then measured on either the mixture directly or a vacuum extraction of the mixture.

A specific conductance of 4 millisiemens per centimeter (mS/cm) or greater is defined as saline or saline-sodic. Sometimes this is reported as decisiemens per m (dS/m) or millimhos per cm (mmhos/cm). All are numerically equivalent.

Reclamation of salt-affected soils is possible. The first step is to assess the situation through a salt-alkali soil test to verify that a salinity problem exists. Find out whether it is only a salinity problem, or

if excess exchangeable sodium also is present.

The second step is to identify the source of the excess soluble salts and, if possible, eliminate the source. This may be a simple as stopping the manure application, or correcting drainage problems. In some cases, such as where the water table is high, it may not be possible to eliminate the source of the problem.

Crops differ in the ability to tolerate salt accumulation in soils, but if levels are high enough (more than 16 mmhos/cm) only tolerant plants will survive. As salts accumulate in soil, the soil solution osmotic pressure increases. When this happens, the amount of water available for plant uptake decreases and plants exhibit poor growth and wilting even though the soil isn't dry.

Crop selection can be a good management tool for moderately saline soils. The table below serves as a general guide of salt tolerance ratings for crops, realizing that management practices, irrigation water quality, environment, and crop variety also affect tolerance.

Salt Tolerance Ratings for Various Field and Forage Crops			
Sensitive (0-4 mmhos/cm)	Moderately Tolerant (4-6 mmhos/cm)	Tolerant (6-8 mmhos/cm)	Highly Tolerant (8-12 mmhos/cm)
Field beans (Dry)	Corn	Wheat	Barley
Red Clover	Grain Sorghum	Oats	Rye
Ladino Clover	Soybeans	Triticale	Bermudagrass
Alsike Clover	Bromegrass	Sunflowers	Crested Wheatgrass
	Sudangrass	Alfalfa	
	Sorghum-Sudans	Tall Fescue	
		Sweet Clovers	

Just as crops differ in tolerance to high salt concentrations, they also differ in their ability to withstand high sodium concentrations. Crop growth and development problems on sodic soils can be nutritional (sodium accumulation by plants), associated with poor soil physical conditions, or both. Plants on sodic soils usually show a burning or drying of tissue at leaf edges, progressing inward between veins. General stunting is also common. If sodium levels are high enough, all crops can be affected.

For more detailed information on saline and sodic soils, see K-State Extension publication MF-1022 at: http://www.ksre.ksu.edu/bookstore/pubs/MF1022.pdf

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4. Agricultural Mobile Apps: A review and update of calculator apps

This article provides a review and update of some of the current "calculator apps" for agriculture.

These apps can assist in calculating such things as the optimum fertilizer N rate, grain yield estimates, tank mix requirements, crop nutrient removal rates, and other features.

While these apps can often help you make quick decisions in the field from planting to harvest operations, always make sure to check with your crop consultants, agents, and Extension specialists since this kind of specific information may vary depending on the soil types, yield potential, and environments.

Stay tuned for more in this series of annual reviews and updates on Ag-Apps from our KSUCROPS Crop Production team and the K-State Department of Agronomy! More updated lists of Ag-Apps will be included in the next several editions of the Agronomy eUpdates.

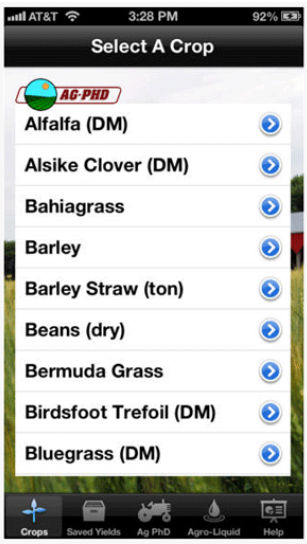
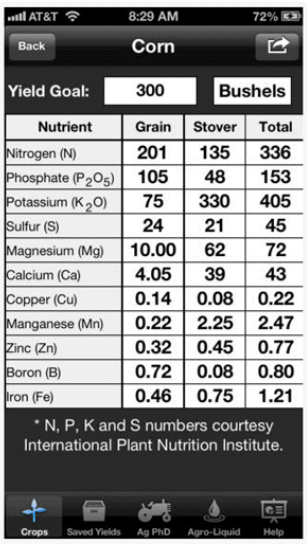
For this series of articles, we have grouped Ag-Apps into the following 10 classifications:

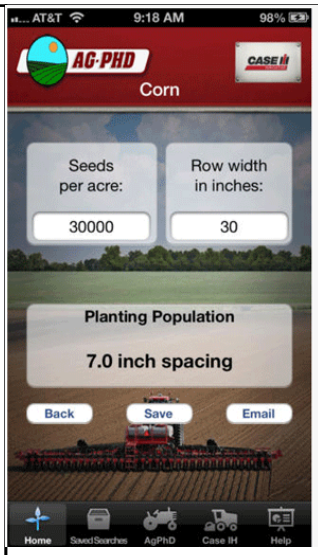
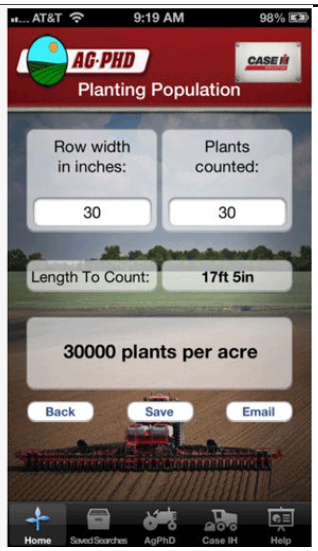
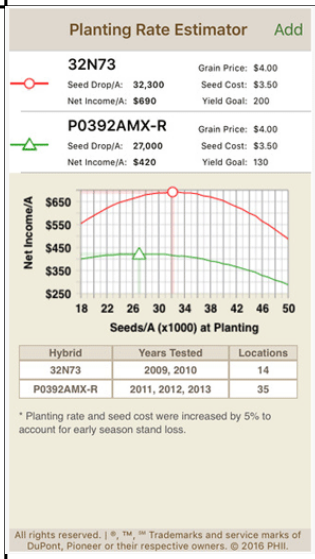
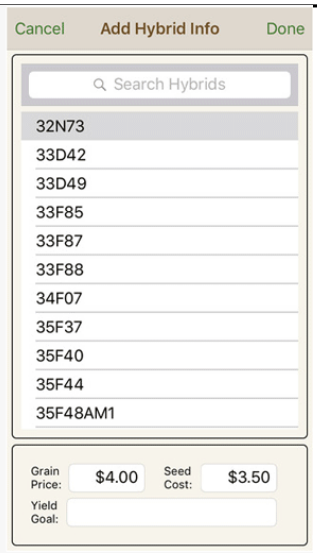
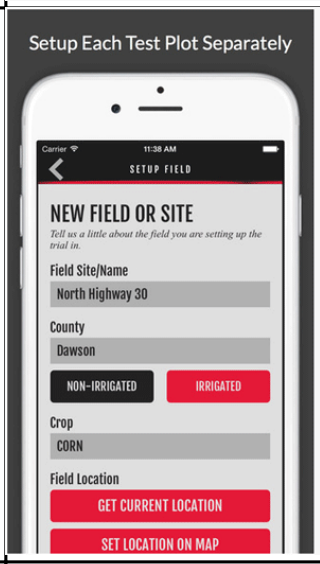
- **ID Apps**: For identification purposes (weeds, insects, diseases, and nutrients)
- **CALC Apps**: For calculating purposes (nutrient removal calculations, tank mixes, volume to spray, etc.)
- **SCOUT Apps**: For scouting purposes or for geo-positioning (soil sampling, recording notes, soil types, etc.).
- **ECON Apps**: For checking grain prices, market evolutions, fertilizer price trends, news and finances.
- **GUIDE Apps**: For diagnosing crop production issues in the field, primarily related to field guides (crop management: insect, disease, weed, and more).
- **LIVESTOCK Apps**: Apps related to the animal side, nutrition, health, and information on markets.
- **IRRIGATION Apps**: Apps related to field crop irrigation and water application.
- **MACHINERY Apps**: Apps for associated with agricultural equipment preparation, inventory, providing information of the machine.
- **GAG Apps**: GAG (General Ag-Apps) for general use, weather-related, for meetings, for reading magazines, among several other Apps' properties.
- **NON-AG Apps**: For general use from e-readers to calculators, email, calendar, picture editing, and more.

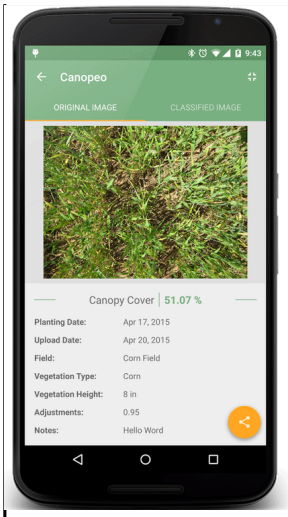
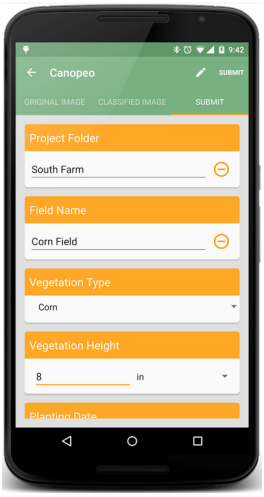
2. Calculator Apps

These Apps are primarily utilized for calculation of planting, spraying, fertilizing, and harvesting purposes; and for estimating yields.

MOBILE AGRICULTURAL APPS – REVIEW from KSUCROPS ©Kansas State University			
Calculator Apps			
Name of App and Source	Picture	Brief description	and cost
Fertilizer Removal by Crop		Select your crop and the desired y for that crop, and you will be give the amount of vital crop nutrients your desired yield will need.	

AG-PHD	 AT&T 3:28 PM 92% Select A Crop AG-PHD Alfalfa (DM) Alsike Clover (DM) Bahiagrass Barley Barley Straw (ton) Beans (dry) Bermuda Grass Birdsfoot Trefoil (DM) Bluegrass (DM) Crops Saved Yields Ag PhD Agro-Liquid Help  AT&T 8:29 AM 72% Back Corn Yield Goal: 300 Bushels Nutrient Grain Stover Total Nitrogen (N) 201 135 336 Phosphate (P_2O_5) 105 48 153 Potassium (K_2O) 75 330 405 Sulfur (S) 24 21 45 Magnesium (Mg) 10.00 62 72 Calcium (Ca) 4.05 39 43 Copper (Cu) 0.14 0.08 0.22 Manganese (Mn) 0.22 2.25 2.47 Zinc (Zn) 0.32 0.45 0.77 Boron (B) 0.72 0.08 0.80 Iron (Fe) 0.46 0.75 1.21 * N, P, K and S numbers courtesy International Plant Nutrition Institute. Crops Saved Yields Ag PhD Agro-Liquid Help	FREE	

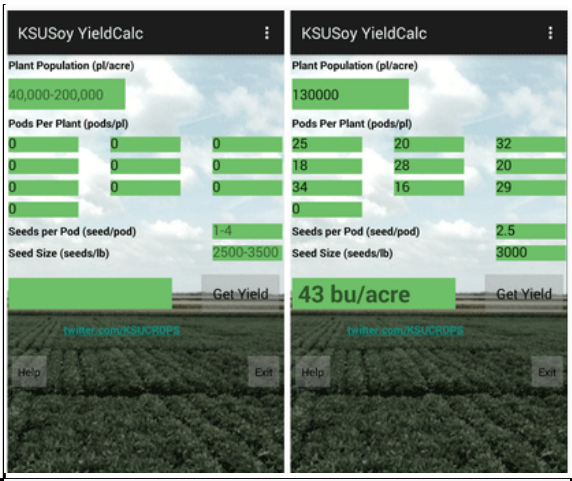
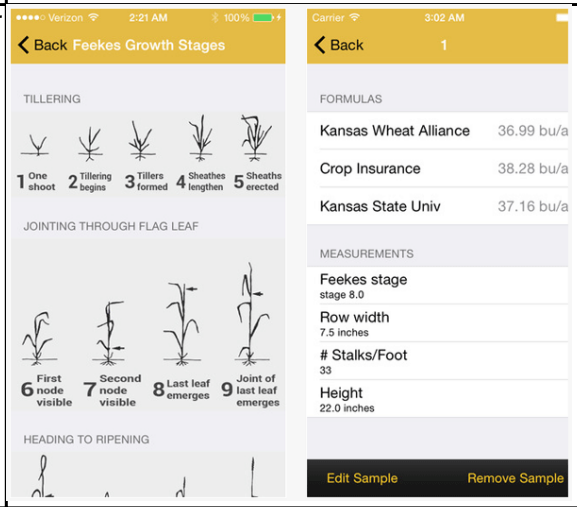
Planting Population Calculator AG-PHD	 	The Ag PhD Planting Population Calculator aids you in determining planting population and stand co for the crops on your farm. FREE
Pioneer Planting Rate Estimator DuPont Pioneer	 	Determine your optimum plantin rate for DuPont Pioneer corn products. FREE
Nebraska On-Farm Research Network Move Creative, LLC (University of Nebraska-Lincoln)	 	App allows you to enter treatmen made on individual fields, and compare yields across the field wh also allowing in-season notes to b taken. FREE
Canopeo		Canopeo is a rapid and accurate g canopy cover measurement tool. FREE

Oklahoma State University	 		

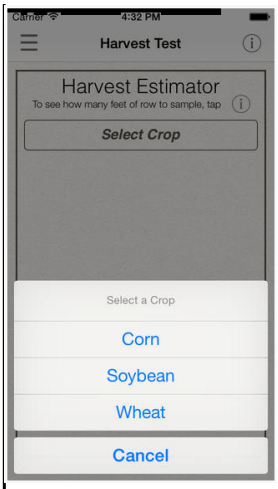
MOBILE AGRICULTURAL APPS – REVIEW from KSUCROPS ©Kansas State University

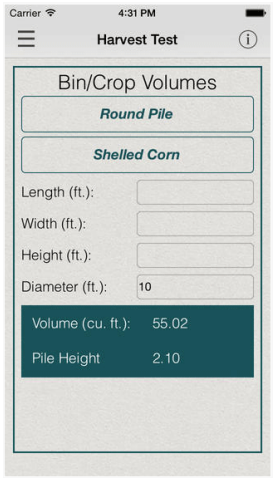
Calculation Apps

Name of App and Source	Picture	Brief description and	cost
KSUSoyYieldCalc		This app estimates soybean yields fro inputs of plant popul ation, pods per plant, seeds per pod, and seed size. FREE	

K-State Research and Extension		
Kansas Wheat Yield Calculator Kansas Wheat Alliance, Inc.		This app lets producers collect information about their winter wheat fields and gives an assessment of potential yield prior to harvest. FREE
Harvest Loss Calculator AG-PHD		Select your crop and input the number of seeds/kernels you count on the ground per sq. ft. to get a harvest loss calculation. FREE
Harvest Test Weight Converter		Assists in determining shrink volumes of grain, in-field estimation of crop yields, and volume of grain bins and grain piles. FREE

University of Nebraska-Lincoln



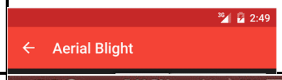
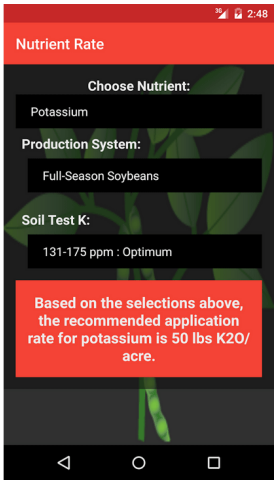
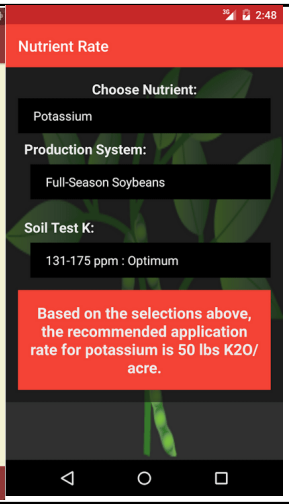


Soybean Advisor

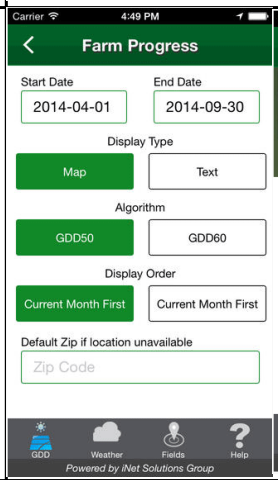
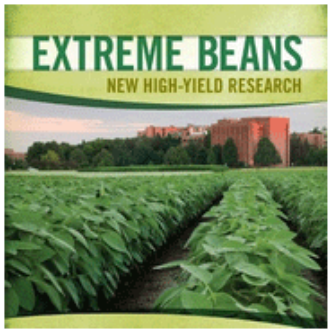
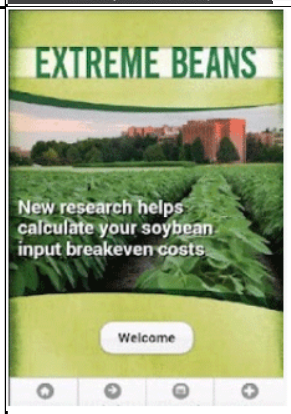
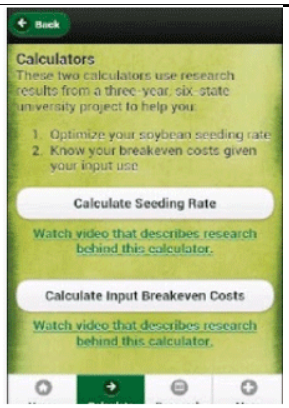
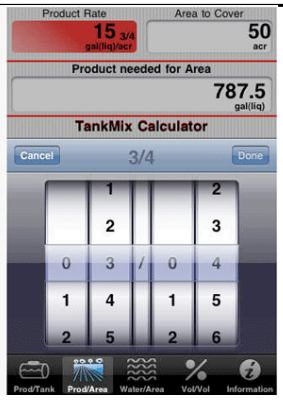
University of Arkansas System, Division of Agriculture

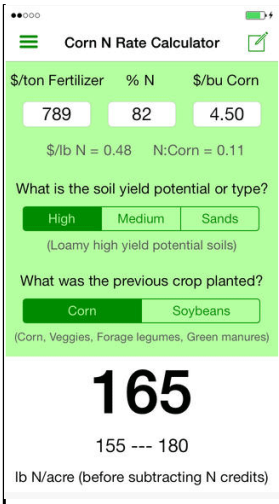
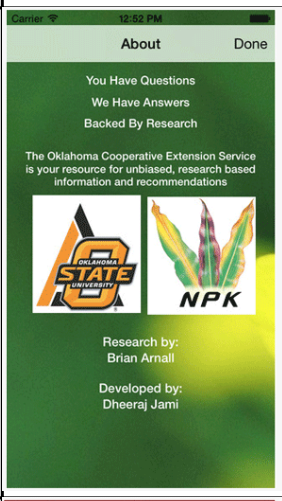
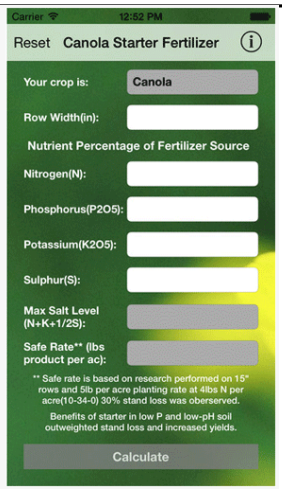
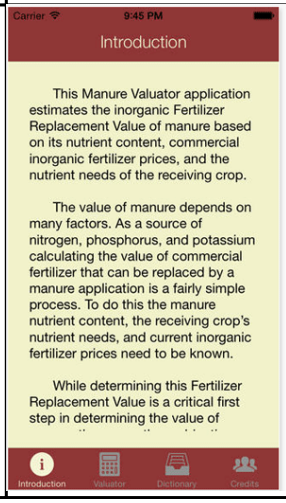
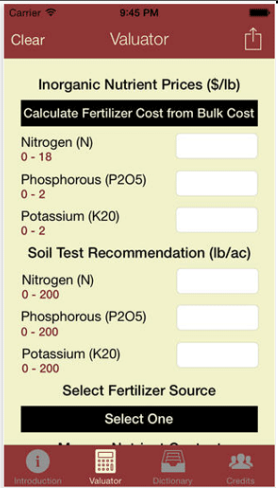
Assists soybean producers by calculating rates for lime and nutrient identify and assess nutrient and wate needs, and disease and insect pressur

FREE

	 		
Corn Advisor University of Arkansas System, Division of Agriculture	 	Assists corn producers by calculating rates for lime and nutrients; identify and assess nutrient and water needs, and disease and insect pressure. FREE	

MOBILE AGRICULTURAL APPS – REVIEW from KSUCROPS ©Kansas State University			
Calculation Apps			
Name of App and Source	Picture	Brief description and cost	
Cotton Advisor		Assists cotton producers by calculatin rates for lime and nutrients; identify and assess nutrient and water needs, and disease and insect pressure. FREE	

University of Arkansas System, Division of Agriculture	 	
Growing Degree Days iNet Solutions Group	 	This app measures the maturity of you crop by analyzing current and past growing degree days data for your farm's location. FREE
Extreme Beans United Soybean Board	  	This app allows soybean farmers to access recent soybean research, and t calculate the most effective seeding rates for high yield results. FREE
Tank Mix DuPont	 	This app allows you to easily calculate the amount of product needed to trea a specific field area, with a specific tar size, for correct volume-to-volume ratio. FREE

Corn N Rate Calculator University of Wisconsin Nutrient and Pest Management Program	 	This app is designed to assist in selecting an N rate that improves profitability when N and corn prices fluctuate. FREE
Canola Starter Oklahoma State University	 	This app calculates the maximum amount of fertilizer that should be applied with winter canola seed at planting. FREE
Manure Valuator University of Arkansas	 	This app can be utilized to calculate t cost of the nutrients to be applied (fertilizer replacement value) and the nutrients needed by the crop. FREE

Each of the next eight issues of the eUpdate will feature another classification of Ag-Apps from our KSUCROPS Crop Production team and the K-State Department of Agronomy!

Ignacio A. Ciampitti, Crop Production and Cropping Systems Specialist
ciampitti@ksu.edu

Jeffrey Albers, Agronomy undergraduate student in crop production, KSUCROPS Team
jjalbers@ksu.edu

5. Early season wheat disease outlook

February and March are critical months for the wheat crop and strongly influence the outlook for the 2016 production season. Mild temperatures and adequate moisture during these months will increase yield potential of the crop, but also increase the risk of severe disease.

The reports to date indicate that stripe rust is active at low levels in Texas (Clark Neely, Texas A&M). Bob Hunger, Extension Plant Pathologist for Oklahoma State University, has reported low levels of stripe rust in southern Oklahoma, and that leaf rust was detected at low levels near Stillwater. These reports are important because severe outbreaks of stripe rust and leaf rust in Kansas are often proceeded by outbreaks of disease in these areas. Weather conditions in Texas and Oklahoma over the next 6 weeks will have a major effect on the development of disease in those states. If the disease continues to develop in the south, the risk of Kansas experiencing severe increases dramatically.

In checking research plots near Manhattan this week, I found trace levels of leaf rust. This is not unusual for this time of year and it is still too early to know if leaf rust will survive the winter this far north. In many years, leaf rust is detected in February; however, dry conditions limit the spread of the disease to new growth fail in March and the disease dies out locally. Low levels of powdery mildew were also observed at this location.

There is no need for management activities at this point. However, growers should be listening for more reports of disease in Texas and Oklahoma. Scouting for overwintering leaf rust in Kansas can begin anytime, but is most useful in late March and early April.

Erick De Wolf, Plant Pathology
dewolf1@ksu.edu

K-State and cooperating agencies are conducting several Prescribed Burning Workshops during February to early March.

Date	Location	Address	Time	Contact
February 17	El Dorado	Community 4-H Building, 206 N Griffith	10 a.m.	David Kehler 316-321-9660 dkehler@ksu.edu
February 19	Manhattan	Pottorf Hall County Fairgrounds	10:30 a.m.	Greg McClure 785-537-6350 gmcclure@ksu.edu
February 23	Wakefield	Wakefield Museum NE corner of 6th and Hickory Streets	9:30 a.m.	Allie Rath 785-263-1351 x 1335 arath@pheasantsforever.org
February 23	Paola	Miami County Fairgrounds 401 East Wallace Park Drive	10 a.m.	Megan Westerhold 913-294-4306 mwesterhold@ksu.edu
February 24	Garnett	Community Building 709 North Lake Road	10 a.m.	Rod Schaub 785-828-4438 rschaub@ksu.edu
February 26	Stockton	Harding 4-H Hall Fairgrounds 918 S Elm	10 a.m.	Rachael Boyle 785-425-6851 rboyle@ksu.edu
February 29	Lawrence	Douglas Co. Extension office 2110 Harper St.	10 a.m.	Megan Fisher 785-840-4616 mfisher@haskell.edu
March 3	LaCrosse	Fairgrounds	10 a.m.	Anna Walkowiak-Esch 785-798-3614 x 1307 awalk@pheasantsforever.org

Each workshop normally lasts about 5 hours. There may be a charge for materials and lunch. Please contact the person listed in the chart above to ask about charges and register.

The smoke dispersal model should be active starting March 1, 2016 (see http://www.ksfire.org).

Walt Fick, Rangeland Management Specialist
whfick@ksu.edu

7. Canola College 2016 in Enid, February 18

Canola College 2016, "Taking Canola Production to the Next Level," will be held February 18, 2016 at the Chisholm Trail EXPO Center, 111 W. Purdue, in Enid, Oklahoma. This conference is sponsored by K-State, Oklahoma State University, Great Plains Canola Association (GPCA), and partners from the canola industry.

This will be the premier canola education/training event in the region in 2016. Canola College 2016 is for anyone with an interest in the canola industry, including experienced and first time growers, crop insurance agents, members of agricultural governmental agencies, and canola industry service and product providers. Attendees will hear from canola experts on a variety of key topics and will have the opportunity to visit with industry members who provide the goods and services needed to produce, handle, and market the crop.

Canola College 2016 topics will include:

Variety Selection – Mike Stamm, K-State Canola Breeder

Environmental and Cultural Impacts on Variety Selection - Heath Sanders, Canola Field Specialist, GPCA

Advanced Production Practices – Bob Schrock, Grower, Kiowa, Kan. and Jeff Scott, Grower, Pond Creek, Okla.

Managing Canola in Conventional and Conservation Tillage Systems – Jason Warren, OSU Extension Soil Management Specialist and Josh Bushong, OSU Canola Extension Assistant

Canola Production in Oklahoma Cropping Systems- Josh Lofton, OSU Cropping Systems Extension Specialist

Impact of Winter Wheat Stubble on Canola Establishment – Angela Post, OSU Extension Weed Specialist

In Season Nutrient Management for Canola Production – Brian Arnall, OSU Extension Soil Fertility Specialist

In Season Risk Management for Canola Production – Josh Lofton, OSU Cropping Systems Extension Specialist and Katie McCauley, OSU PaSS M.S. Candidate

Disease Management – John Damicone, OSU Extension Plant Pathologist

Insect Management – Tom Royer, OSU Extension Entomologist

New for 2016 will be the Canola Learning Laboratory**.** Attendees will be able to attend a learning laboratory where many of the concepts and theories presented throughout the conference will be on display through hands-on demonstrations. Participants will interact with specialists, get specific questions answered, and learn about the demonstrated concepts. Individual stations will focus on critical topics, such as: nutrient deficiency identification, herbicide uptake, weed/disease/insect identification, plant physiological changes with management practice, and winter survival.

Individuals can register for Canola College 2016 at www.canola.okstate.edu

For more information on Canola College, contact Ron Sholar, Executive Director, GPCA, at Jrsholar@aol.com or Josh Lofton, Extension Cropping Systems Specialist, OSU, at josh.lofton@okstate.edu

Mike Stamm, Canola Breeder
mjstamm@ksu.edu

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:

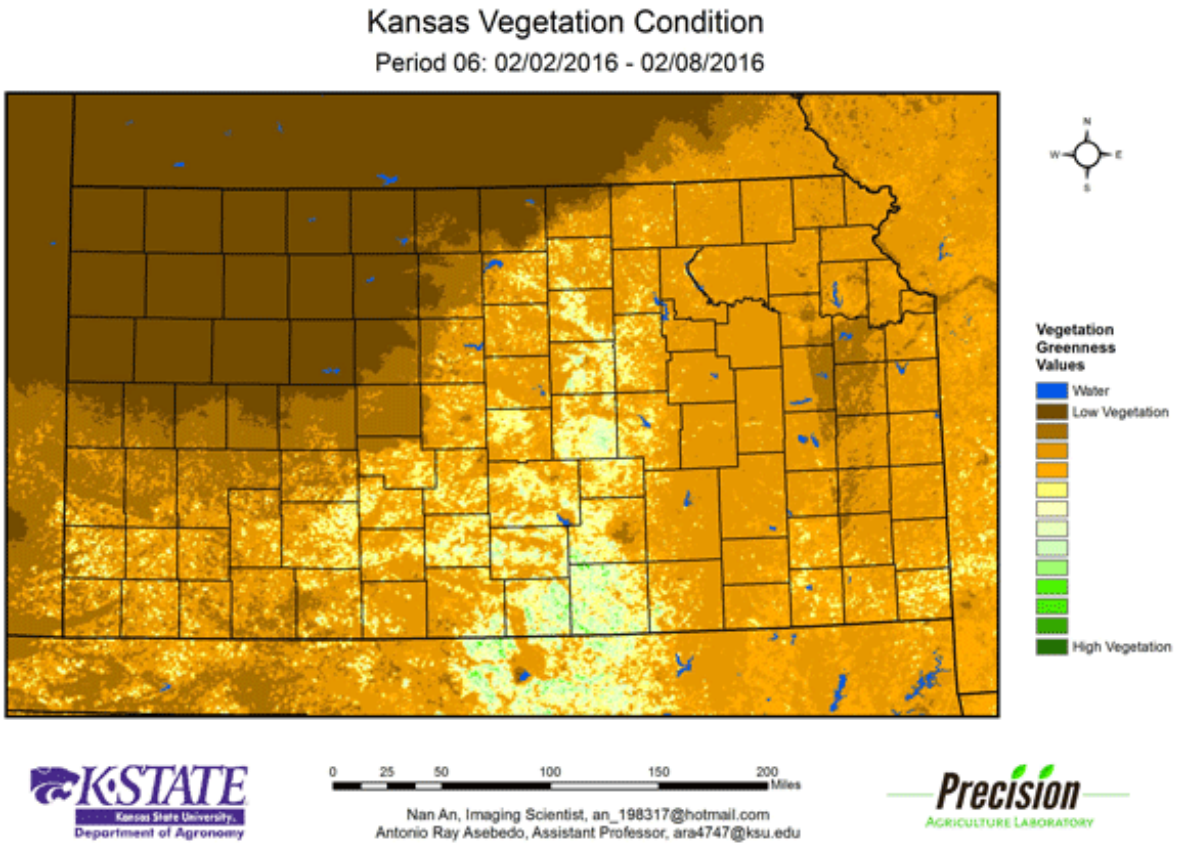


Figure 1. The Vegetation Condition Report for Kansas for February 2 – 8 from K-State's Precision Agriculture Laboratory shows that the area of highest biomass production continues to spread northward from Harper and Sumner counties. Favorable moisture and milder-than-normal winter temperatures has accelerated growth in these areas. The very low NDVI readings in the Northwestern Division are directly related to the heavy snow received there. Amounts of 6 or more inches were common, with the highest totals reaching 17 inches in Decatur County.

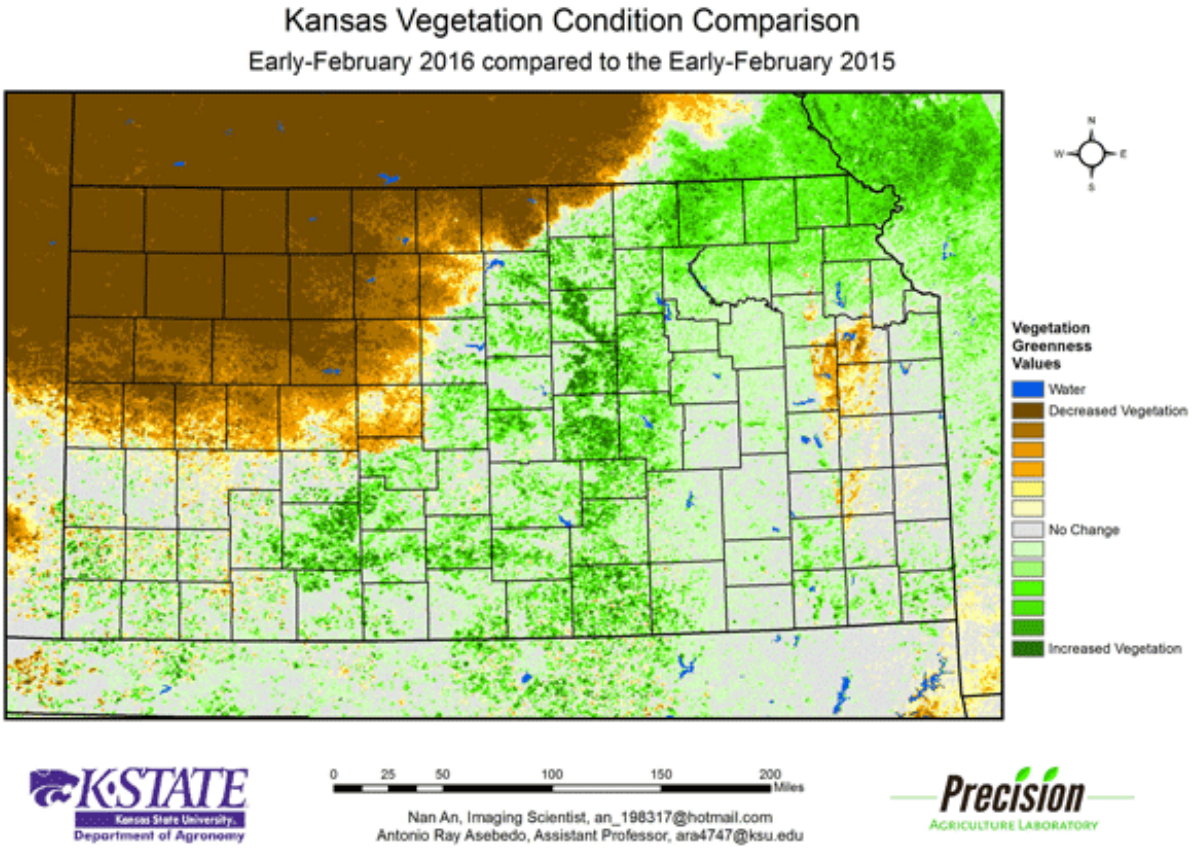


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for February 2 – 8 from K-State's Precision Agriculture Laboratory shows much of the state with higher photosynthetic activity. The largest area of decreased vegetative activity is in the Northwestern Division. This is mainly the result of snow cover from the winter storm that left snow totals in the 6 – 12 inch range.

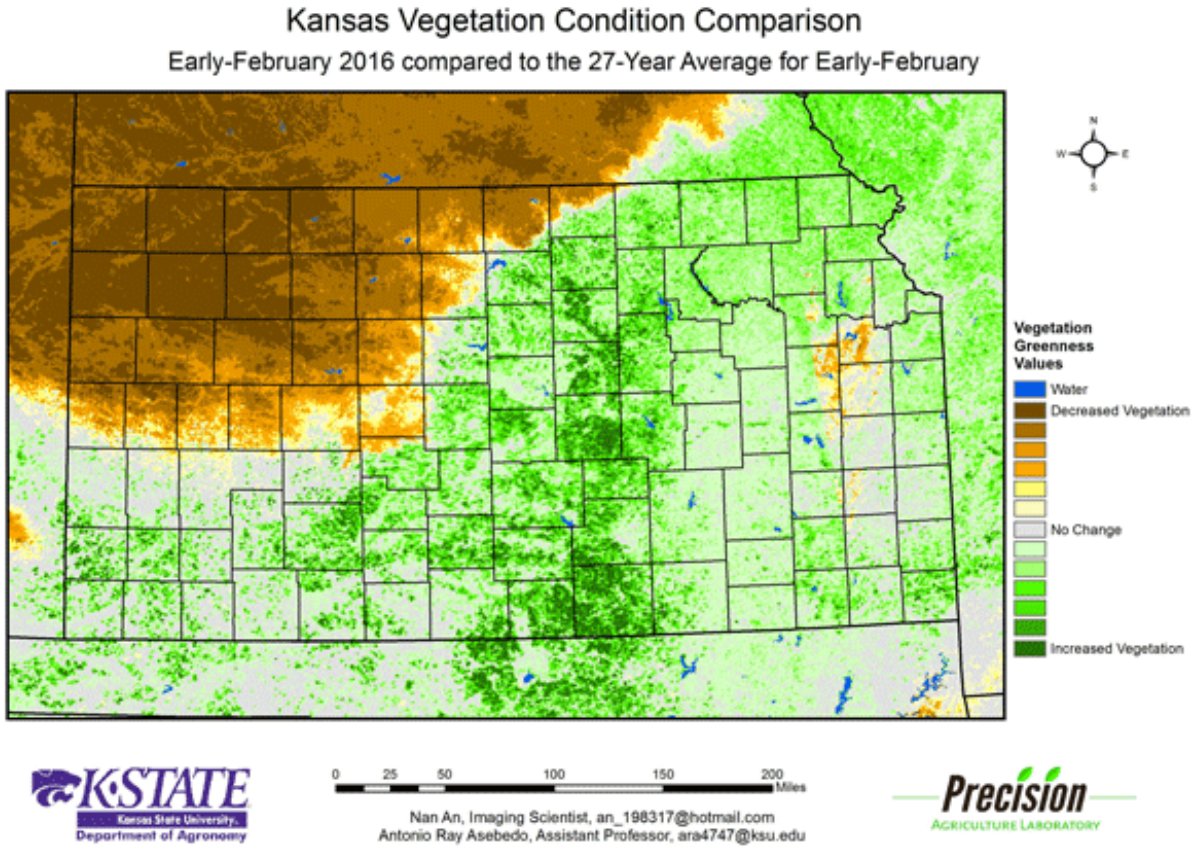


Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for February 2 – 8 from K-State's Precision Agriculture Laboratory shows that most of the state continues to show above-average photosynthetic activity. The central parts of the state have the largest areas of above-average photosynthetic activity as moisture continues to be favorable. Temperatures have been close to average for the week, with colder conditions in the west and warmer conditions in the east. As mentioned in the comments for the previous year comparison map in Figure 2, the reduced vegetative activity in northwest Kansas is due to the February 3rd snowstorm.

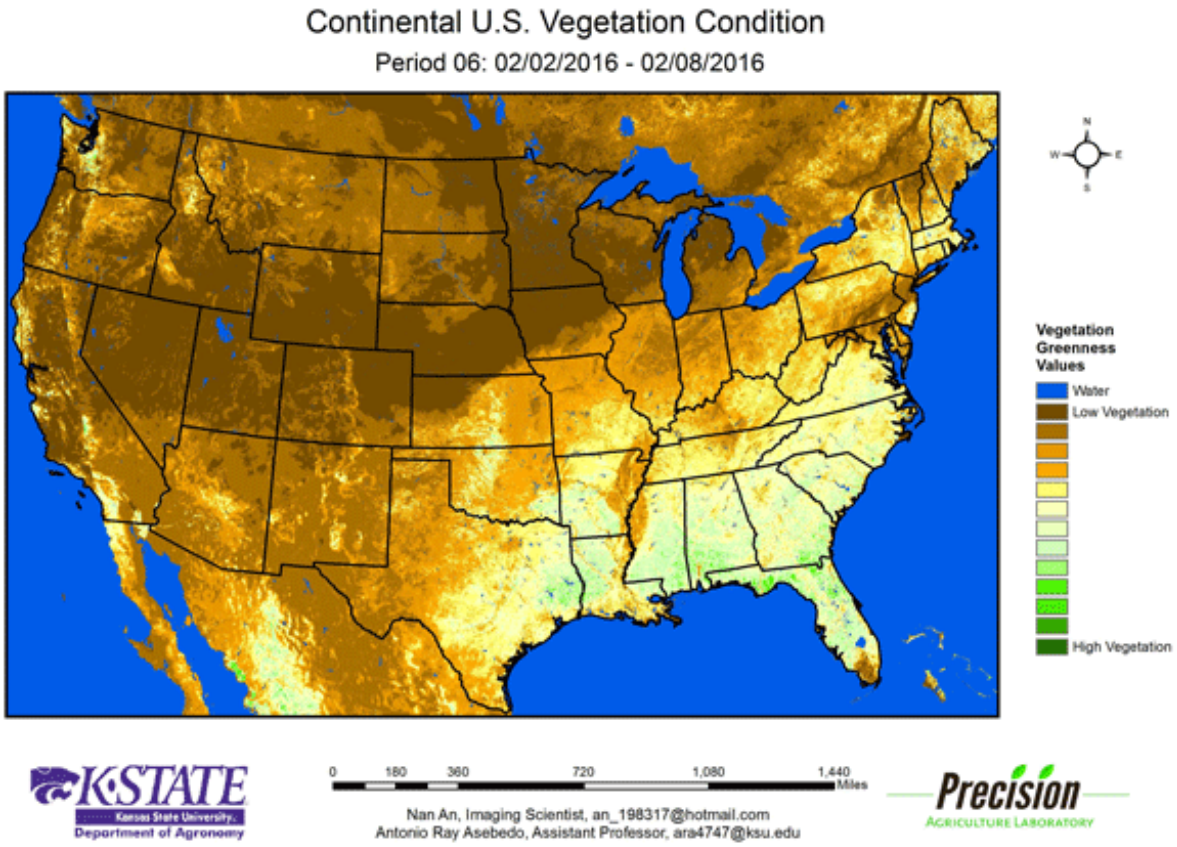


Figure 4. The Vegetation Condition Report for the U.S for February 2 – 8 from K-State's Precision Agriculture Laboratory shows that the highest level of photosynthetic activity is in the Deep South, where favorable temperatures continue. Low NDVI readings in the Pacific Northwest are actually very positive as that indicates a substantial snowpack. Lingering impacts of the December flooding continue to be visible in the reduced vegetative activity in the lower Mississippi River Valley.

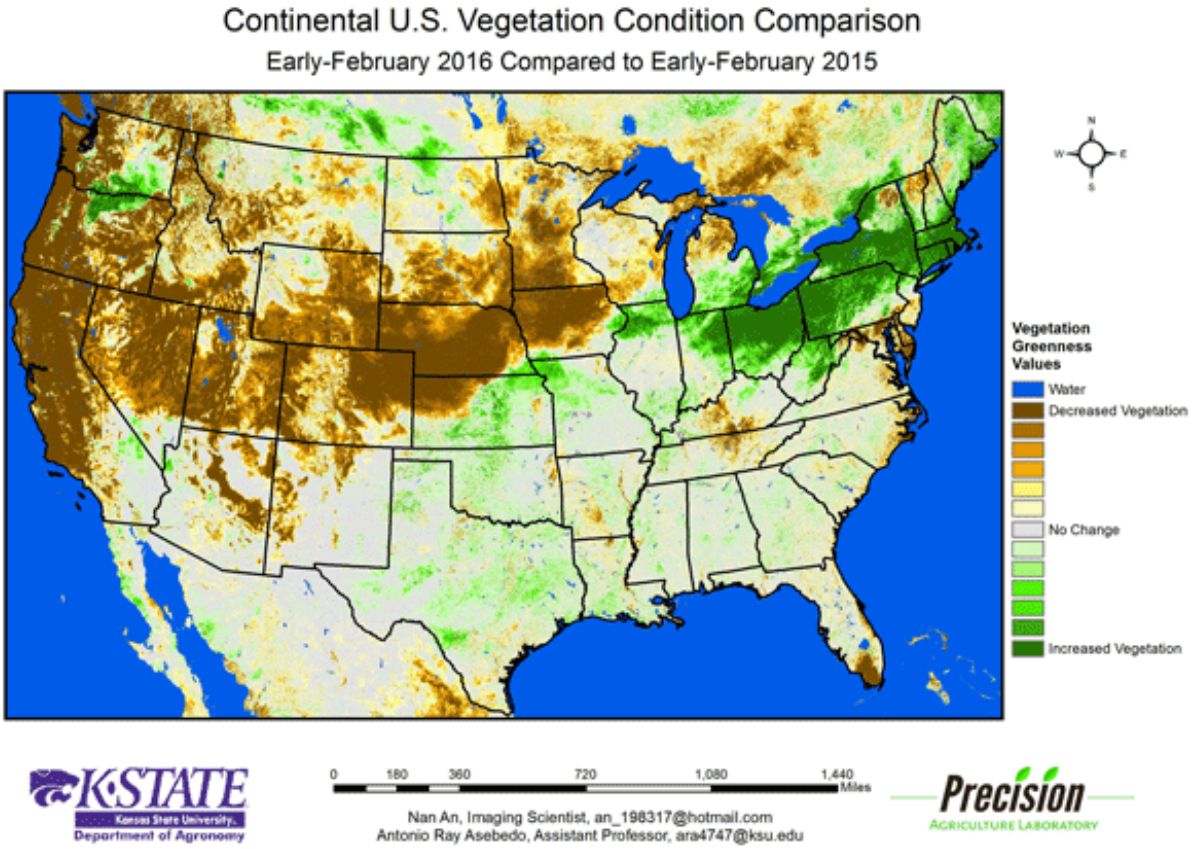


Figure 5. The U.S. comparison to last year at this time for the period February 2 – 8 from K-State's Precision Agriculture Laboratory shows that lower NDVI values are most evident in the Pacific Northwest, while much higher NDVI values are visible in the Great Lakes region. Snow is the major driver for both. The Great Lakes area continues to have a low-snow season, while the Pacific Northwest has a higher snow pack than last year. This has resulted in significant drought relief, although much more precipitation is needed.

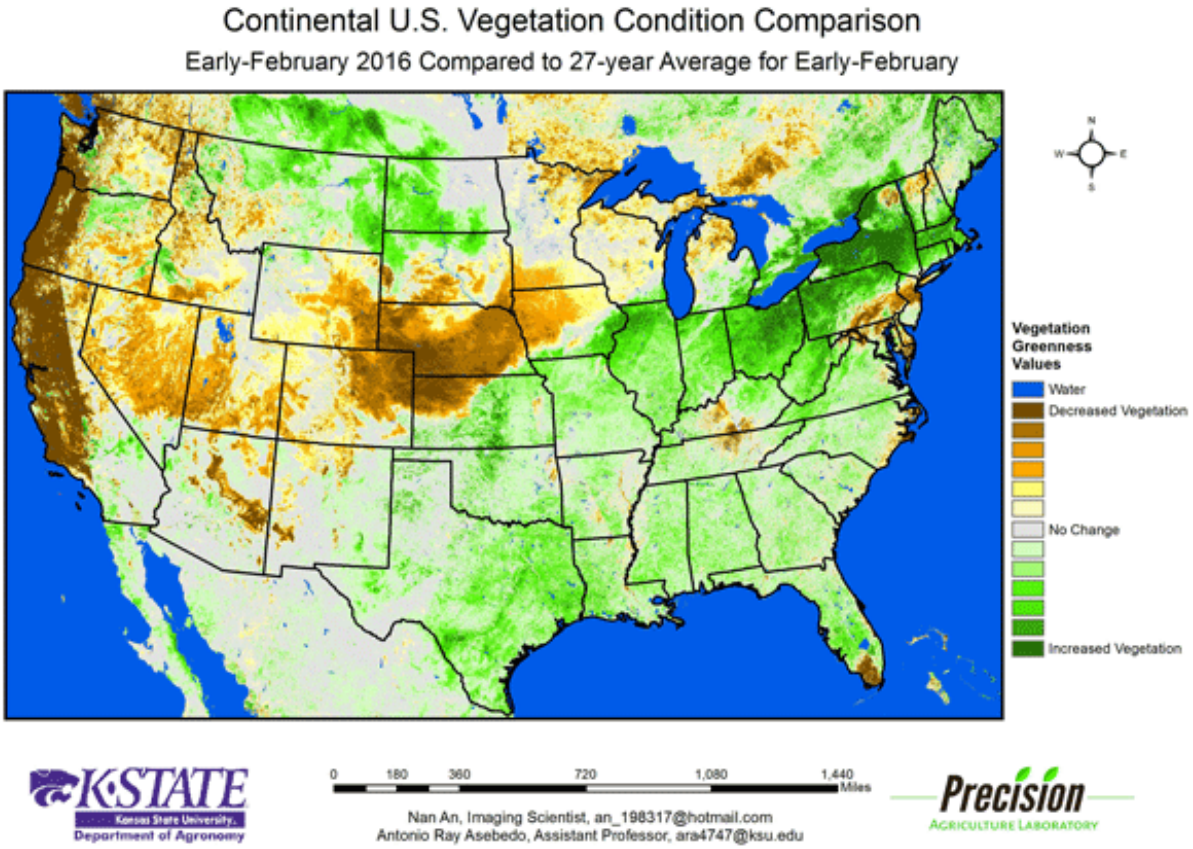


Figure 6. The U.S. comparison to the 27-year average for the period February 2 – 8 from K-State's Precision Agriculture Laboratory shows much lower NDVI readings along the West Coast. The decrease is due largely persistent stormy weather and attendant clouds along the coast. The impact of the East Coast blizzard at the end of January is also clearly visible as reduced NDVI readings, although the coverage is shrinking. The increased NDVI readings in eastern Montana and North Dakota are of concern. Snow pack in these areas is below average (snow coverage results in low NDVI readings) and abnormally dry conditions continue to expand in the area.

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Ray Asebedo, Precision Agriculture

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Nan An, Imaging Scientist
an_198317@hotmail.com