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Research and Extension

Extension Agronomy

eUpdate

03/04/2016

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. Status of new ALS-resistant Inzen sorghum technology

A major hurdle has been overcome in getting the new herbicide for ALS-resistant Inzen sorghum on the market. The U.S. Environmental Protection Agency recently announced the registration approval of the dry formulation of the active ingredient nicosulfuron for use on Inzen sorghum hybrids. This is a supplemental label. A new liquid formulation of nicosulfuron called “Zest” should be labeled for use on Inzen sorghum in the next few months.

For now, the key development is that the active ingredient nicosulfuron now has a registration for Inzen sorghum. As a result, we are well on our way to having this new technology approved and ready for on-farm use.

Inzen sorghum hybrids are being actively developed by DuPont Pioneer and Advanta. Other sorghum breeding companies may also license the technology from DuPont and must work through DuPont’s agreement prior to commercialization of hybrids. Hybrid availability is extremely limited in 2016 and will likely be on a demonstration basis only.

K-State also has an active and very successful sorghum breeding program, and has developed excellent inbred lines. Experimental ALS-resistant hybrids developed internally from these inbred lines have been among top-yielding hybrids in K-State breeding tests. Interested sorghum companies can get more information on the availability of these ALS-resistant inbreds by contacting K-State sorghum breeder, Dr. Tesfaye Tesso at ttesso@ksu.edu

As new hybrids become available growers will have the opportunity to use this technology. The herbicide label and information included when purchasing Inzen sorghum seed will discuss best management practices to ensure the long-term viability and sustainability of this technology. A seed agreement will have to be signed when buying Inzen sorghum hybrids.

In grain sorghum, Zest can control volunteer sorghum, small annual grasses such as volunteer wheat, witchgrass, barnyardgrass, the foxtails, and crabgrass. Remember, Zest is not glyphosate. Zest must be applied to very small grasses. Generally Zest may provide poor control of grassy sandbur and stinkgrass unless these grasses are very, very small at the time of application. A complete list of grasses controlled is provided in the Zest label.

It is strongly encouraged that growers using this technology begin with the use of preemergence herbicides primarily to manage, pigweeds, kochia, and difficult-to-control annual grasses. This really is no different than attempting to manage these weeds in conventional sorghum. The greatest difference is that growers utilizing Inzen technology will have a second chance to control annual grasses, if necessary.

Producers will need to tank mix another herbicide with Zest if they wish to get postemergence broadleaf control. Tankmix options include atrazine, dicamba, 2,4-D LV, Starane Ultra, and Ally. Do not use crop oil concentrate with 2,4-D or dicamba. Certain herbicides may antagonize grass control and this is especially true with crabgrass. Do not tank mix with Huskie as significant grass antagonism and crop injury can result.

One thing producers should be aware of when using this new grain sorghum system is that certain Inzen hybrids are a little yellowish at the time of emergence. These hybrids will grow out of it and

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appear normal later in the season. Also, the application of Zest herbicide may cause some temporary yellowing to the Inzen hybrids (and by the way, this herbicide will kill non-Inzen hybrids). There is no stunting of the Inzen hybrids from Zest, however, and the temporary chlorosis appears to be cosmetic. Hybrids are being developed which emerge green and stay green following application. This is true of the K-State inbreds mentioned above.

DuPont and EPA has approved best management practices to minimize the risk of resistant weed development. Keep in mind, it's only a simple cross from sorghum to shattercane. For this reason, shattercane is not listed on the label as a grass species to be controlled.

Inzen sorghum technology is the result of a 10-year partnership between Kansas State University and DuPont Crop Protection with support from the Kansas Grain Sorghum Commission, the Sorghum Checkoff, and National Sorghum Producers.

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2. Soil-applied residual herbicide options for soybeans

There are many good reasons to use a soil-applied residual herbicide for soybeans. Producers may want to:

- Get early-season control of weeds and grasses to minimize early-season weed competition and provide more flexibility with postemergence treatment timing.
- Provide some residual weed control before and following the postemergence glyphosate.
- Provide some assistance to glyphosate in controlling certain hard-to-control or glyphosate-resistant weeds.
- Use a second herbicide mode of action to prevent or delay the development of glyphosate-resistant weeds.

In developing an alternative to the exclusive use of postemergence glyphosate treatments on Roundup Ready soybeans, it is useful to know what weeds or grasses are being targeted. Some good options for the most common weed and grass problems include:

Pigweeds (including waterhemp and Palmer amaranth). Glyphosate-resistant waterhemp and Palmer amaranth are now fairly common in many fields throughout Kansas. Pigweed emergence will generally start in April but the greatest amount of emergence will occur in May and June. Preemergence or burndown-plus-residual herbicide applications will need to be targeted in these months before pigweed has emerged or while it is still at small growth stages.

For early-season pigweed control, the Valor-based herbicides (Valor SX, Valor XLT, Rowel, Encompass, Outflank, Panther, Fierce, Fierce XLT, Gangster, Surveil, Trivence, Afforia, Envive, and Enlite) and Authority-based herbicides (Authority First, Sonic, Authority Assist, Authority MTZ, Authority Maxx, Authority Elite, Broadaxe XC, Spartan, and Spartan Elite) can all provide very good to excellent control to supplement a postemergence program. If glyphosate-resistant pigweed is suspected, higher use rates may be required to give adequate residual control. Prefix is another excellent “foundation” herbicide for residual pigweed control in soybeans. Metribuzin, Zidua, Anthem, Warrant, Dual, Boundary, Outlook, and Prowl products can also provide some early-season pigweed control, but may not provide as much residual control as those previously mentioned products. Split applications of overlapping residual herbicides early preplant and at planting or early postemergence may be the best approach to manage glyphosate resistant pigweed in no-till systems.

Marestail. Marestail is probably the most widespread glyphosate-resistant weed in Kansas. Marestail control in Roundup Ready soybeans should begin in early spring by controlling fall-germinated seedlings and rosettes before they start to bolt. 2,4-D and Clarity can be used in early spring, but the proper preplant intervals need to be followed. The preplant intervals for 2,4-D LV4 are 1 week for up to 1 pt/acre and 30 days for 1 to 2 pt/acre. The preplant interval for Clarity is 14 days following an application rate up to 8 oz/acre and accumulation of 1 inch of rainfall. Clarity has generally provided better marestail control than 2,4-D.

The Kixor-containing products Sharpen, OpTill, and Verdict can be used any time before soybean emergence (cracking), but are most effective if applied before plants get too big. To optimize marestail control with Kixor products, use an adequate spray volume to insure good spray coverage and apply in combination with a methylated seed oil. Liberty herbicide may be the best option as a rescue treatment to burn down bolted marestail prior to planting. There is no waiting interval

required between a Liberty application and planting soybeans, but it will not provide any residual marestail control. Other preplant herbicides that can help with burndown and provide residual marestail control include FirstRate-based herbicides, such as Authority First, Sonic, Gangster, or Surveil.

Velvetleaf. Glyphosate is not always entirely effective on velvetleaf. To assist in velvetleaf control, the Valor-based and FirstRate-based herbicides (Valor SX, Valor XLT, Rowel, Encompass, Outflank, Panther, Fierce, Fierce XLT, Gangster, Surveil, Authority First, and Sonic, Trivence, Afforia, Envive, and Enlite) are some of the most effective preplant and preemergence herbicides you can use.

Cocklebur. The most effective preplant and preemergence herbicides to aid in cocklebur control are those that contain First Rate, Classic, or Scepter. Such products would include Authority First, Sonic, Authority XL, Authority Maxx, Gangster, Surveil, Envive, Fierce XLT, and Valor XLT. Extreme, which is a premix of glyphosate and Pursuit, can also be used as a preplant or postemergence treatment in Roundup Ready soybeans to provide residual cocklebur control.

Morningglory. Glyphosate sometimes has trouble controlling morningglory. To help get better control, you can use either Authority-based or Valor-based herbicides preplant or preemergence. OpTill and OpTill Pro can also provide good early season morningglory control.

Kochia. Kochia is a major weed problem in western areas and historically has been difficult to control with glyphosate, especially as it gets bigger. In addition, much of the kochia in western Kansas is now glyphosate-resistant. A majority of kochia will probably have emerged prior to soybean planting, so controlling that kochia before planting is critical. Research by K-State the last couple of years indicates that Authority-based products have provided the best residual kochia control in soybeans. Metribuzin can also provide good kochia control, but soil pH and texture label guidelines need to be followed. The Kixor-containing products, such as Sharpen, OpTill, and Verdict, may help with kochia burndown and early-season kochia control, but may not provide very much residual control. ALS-inhibiting herbicides may or may not provide kochia control because of the occurrence of ALS-resistant kochia.

Crabgrass and other small-seeded grasses. Glyphosate usually gives good control of most grasses, but producers may want to apply a foundation herbicide to control grasses early, then make just one postemergence glyphosate application later. Fierce, Fierce XLT, Prefix, Zidua, Anthem, Dual II Magnum, Outlook, Warrant, and Prowl H2O can all provide early season grass and pigweed control ahead of Roundup Ready soybeans. Of these, Fierce, Fierce XLT, Prefix, and Zidua generally provide the best pigweed control, and Prowl H2O the least.

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3. Kansas Smoke Model web site now active

One of the key elements of the Kansas Flint Hills Smoke Management Plan is the smoke modeling decision-aid tools. The tools can be found at:
<http://ksfire.sonomatechdata.com/view/summary/>

Producers in the Flint Hills region are encouraged to use these tools as part of their prescribed burn planning. The purpose is to help avoid air quality problems that have been associated with the burning of an average of 2,500,000 acres in the region each spring.

What you'll see on the web site

The Cumulative Fire Impacts page has a map showing the potential for each area to negatively impact air quality at a monitoring site in Kansas or southeastern Nebraska. Smoke from fires in areas that are colored red have a high possibility of decreasing air quality in a monitor location. Fires in yellow areas also have an elevated chance of negatively impacting air quality.

The graphics below are March 4 screen shots from the web site to illustrate this feature.

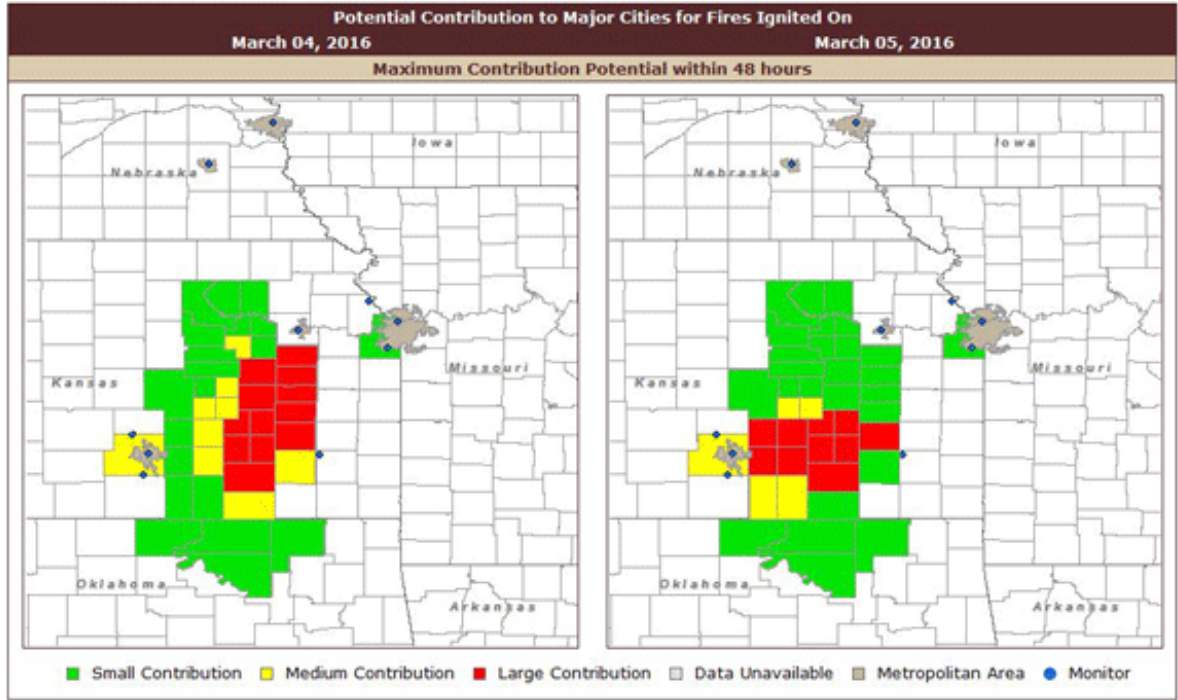


The tools provided below are to access air quality information only. For burn safety decisions, please consult other resources such as the Topeka, Kansas or Wichita, Kansas National Weather Service websites.

About Cumulative Fire Impacts Your Fire Impacts

Fire impact predictions only available from March 1, 2016 through May 1, 2016. Forecasts are updated daily at 1:00 p.m. CDT.

View as: Map | Table



Forecast Discussion
 Friday, March 4: Moderate and gusty south-southwesterly winds will transport smoke from potential fires in the eastern Flint Hills into Topeka.
 Saturday, March 5: Moderate easterly winds will transport smoke from potential fires in the central Flint Hills into Wichita.

Extended Forecast
 This forecast is for air quality impacts only.
 March 6, 2015: Worsening conditions for burning are expected.
 March 7, 2015: Worsening conditions for burning are expected.
 March 8, 2015: Improving conditions for burning are expected.
 March 9, 2015: Worsening conditions for burning are expected.

Color	Potential Contribution
Green	Fires in the county are expected to have a small contribution
Yellow	Fires in the county are expected to have a medium contribution
Red	Fires in the county are expected to have a large contribution
White	The county is not included in the model

The map shows two days at a time. Before noon, the maps are for the current day and the next day. After noon, the maps are for the next day and the day after. Areas coded red for the current day may be coded green on the following day. Producers can opt to hold off burning for a day if weather conditions are changing and the prediction is for reduced smoke impacts the following day. For example, in the graphic above, Lyon County goes from red on March 4 to green for March 5, indicating a reduced chance of a burn in that county impacting air quality by waiting a day to burn.

Near the bottom of the page is a very brief forecast discussion, including an extended forecast for the Flint Hills region. This can also assist a producer in deciding whether to postpone a burn and wait for improved dispersion conditions.

It is important to note that the map is for smoke dispersion only. It does not provide any information on other important prescribed burning weather conditions, such as wind speed, temperature, and humidity (e.g. 5-15 mph, 40-80 F, and 40-70%). Dispersion is generally excellent on days that are otherwise too windy to burn safely. Use <http://www.weather.gov> to obtain your local forecast.

For instance, on March 4 in Emporia, at noon, the temperature is forecast to be 58 F, with wind gusts in excess of 25 mph, and 38% relative humidity. On March 5, the forecasted weather for Emporia at noon is 57 F, 8 mph wind, and 38% relative humidity. Producers are strongly requested to refrain from starting a prescribed burn on the days when a fire in their area would cause air quality problems at a monitoring site (when their area of the map is colored red or yellow).




For most producers, knowing the “cumulative fire impacts” prediction for their area is adequate. But there’s a second tool that producers can use to see specifically where a plume of smoke is forecasted to go from their fire. This modeling tool can be found on the tab “Your Fire Impacts.”



The tools provided below are to access air quality information only. For burn safety decisions, please consult other resources such as the Topeka, Kansas or Wichita, Kansas National Weather Service websites.

About Cumulative Fire Impacts **Your Fire Impacts**

Fire impact predictions only available from March 1, 2016 through May 1, 2016. Forecasts are updated daily at 1:00 p.m. CDT.

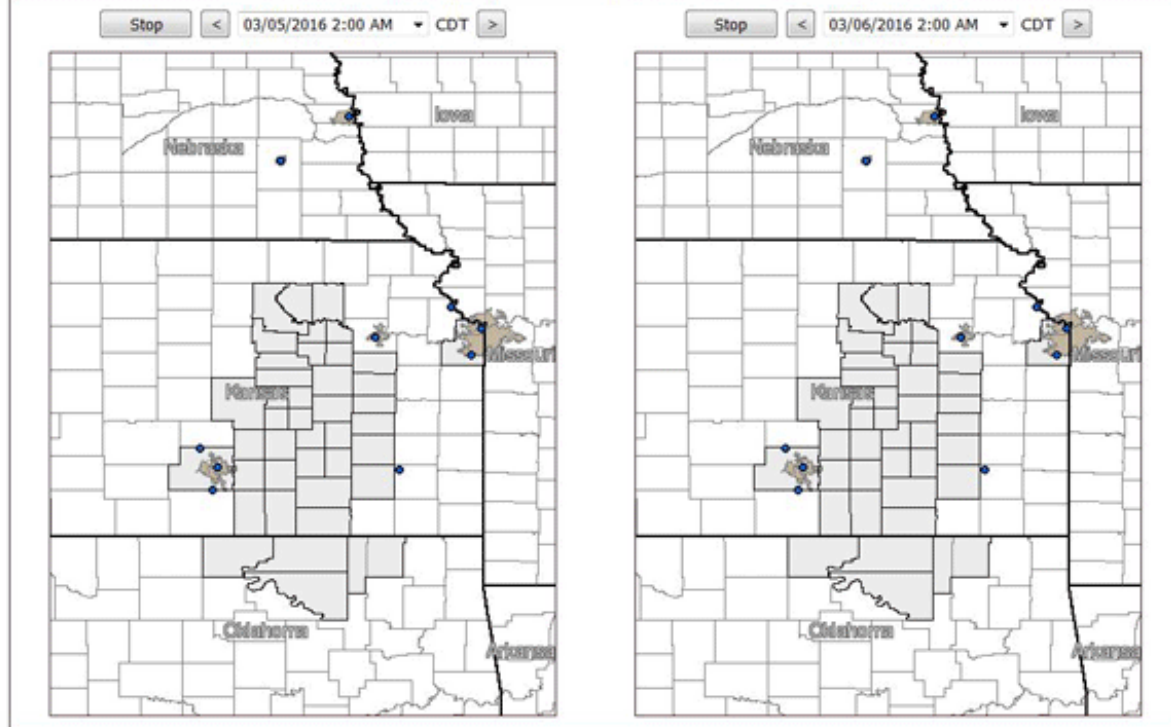
Fuel Load			County	Size	Date
			Butler Northeast	<1000 acres	03/03/2016
Light	Medium	Heavy			

48-Hour Impact Potential For Fires Ignited On

March 04, 2016

March 05, 2016

You are now looking at the impact potential for a fire in Butler Northeast County.



To use this tool, producers enter their location, estimated fuel load, and number of acres to be burned. The model will generate an image of the smoke plume movement from their burn. Often you can see by the plume movement why a region would be coded red, as the plume moves directly over a monitoring location.

The modeling tools are also available in a format for mobile devices:

<http://ksfire.sonomatechdata.com/view/mobile/>

Besides the tools discussed above, the website ksfire.org has a much additional information related

to prescribed burning and links to the Kansas Flint Hills Smoke Management Plan, weather, county burn regulations (partial list), and more.

The Kansas Smoke Management Facebook page, found at <https://www.facebook.com/ksfire>, provides information updates about smoke management and fire in the Flint Hills, especially before and during the spring burn season.

Spreading out the burn season: Match the timing of the burn with objectives

Spreading out the burn season is another way to reduce air quality problems. Evaluate your burn objectives. Increased yearling steer weight gains are one of the primary reasons burning is conducted in April. A late-spring burn will also benefit warm-season grasses. Burning in early spring will enhance forbs. Prescribed burns can be conducted almost anytime to remove thatch and litter or to improve grazing distribution. Prescribed burning of conservation reserve program (CRP) acreage needs to comply with FSA requirements. Burning at times other than April reduces smoke concentration and can lead to fewer air quality problems.

For more information, there are three K-State Research and Extension publications available on air quality related to prescribed burning:

Fire Management Practices to Improve Air Quality

<http://www.bookstore.ksre.ksu.edu/pubs/MF3072.pdf>

Air Quality Concerns of Prescribed Range Burning in Kansas

<http://www.ksre.ksu.edu/bookstore/Item.aspx?catId=364&pubId=16940>

Fire Management Practices Used to Reduce the Impacts of Smoke Before, During, and After a Burn

http://www.ksfire.org/docs/education/FMP_pamphlet_9_11.pdf

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4. First hollow stem update: March 4, 2016

In this week's first hollow stem (FHS) measurements, we observed great variability among individual plants. However, despite the warm temperatures during the past week, none of the varieties in our replicated trial in Hutchinson has reached FHS. As of March 2, a few of the 40 stems measured per variety were close to or had reached FHS in the most early-release varieties, such as WB4303 and Gallagher (Figure 1). But averaged over 40 stems, none of the varieties had reached FHS at time of measurements.



Figure 1. A few plants from early-release varieties such as WB 4303 (about 1.1 cm hollow stem) and Gallagher (beyond FHS in this photo) had elongated stems as of March 2. Still, the average of all stems measured had not reached FHS for any variety as of that date. Photos by Brent Jaenisch, graduate research assistant, K-State Research and Extension.

The average length of hollow stem for each variety is reported in Table 1. As of March 2, the more advanced varieties have between 0.65 and 0.73 cm of hollow stem and therefore are not yet at FHS, -- which occurs at 1.5 cm (about a half-inch). As of March 2, the more advanced varieties are WB4303, Overley, Gallagher, WB-Cedar, and 1863; but none has yet reached FHS.

Producers grazing cattle on wheat in the south central region of Kansas, near Hutchinson, should be scouting their individual fields for FHS to make the decision of when to take cattle off their wheat pasture. Cattle might need to be removed from some fields within the next few days, depending on

variety and weather conditions.

Wheat near the southern border of Kansas should be more advanced in its development. Producers in far southern Kansas who currently graze their wheat and intend to harvest it for grain should be actively scouting their fields for FHS and possibly should already be removing cattle from wheat pasture at this time. For more details on how to scout for FHS, please refer to Agronomy eUpdate article "[Optimal time to remove cattle from wheat pastures: First hollow stem](#)" in the Feb. 5, 2016 issue).

Table 1. Length of hollow stem measured on March 2, 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	0.65
Bentley	0.45
Danby	0.43
Doublestop CL Plus	0.43
Duster	0.43
Everest	0.53
Gallagher	0.77
KanMark	0.58
LCS Chrome	0.42
LCS Mint	0.44
LCS Pistol	0.55
LCS Wizard	0.47
Overley	0.70
Ruby Lee	0.54
SY Flint	0.53
SY Wolf	0.47
T158	0.46
TAM 114	0.53
WB4303	0.75
WB4458	0.61
WB-Cedar	0.78
WB-Grainfield	0.53
WB-Redhawk	0.61

Variety	$p < 0.01$
LSD	0.13

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 when making the decision to remove cattle from wheat pastures.

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5. Agricultural Mobile Apps: A review and update of field guide apps

This article provides a review and update of some of the current “field guide apps” for agriculture. These apps can assist farmers in some of their farming decision-making processes -- from identification of insects, diseases, and weeds to information about seed selection and management practices to be implemented for a specific production problem. Identification of turf management issues and horticultural plants are also included among several other features.

While these apps can often help you make quick decisions, always make sure to check with your crop consultants, Extension agents, and Extension specialists.

Stay tuned for more in this series of annual reviews and updates on Ag-Apps from our KSUCROPS Crop Production team (led by Dr. Ciampitti) 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.

NOTE: These apps are all available as of the time this article is published. Alterations or changes in availability could occur, affecting the ability to access these apps.



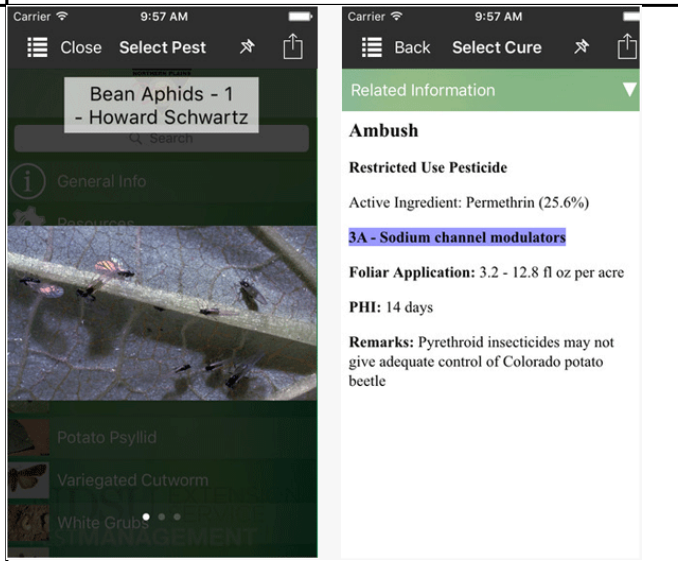

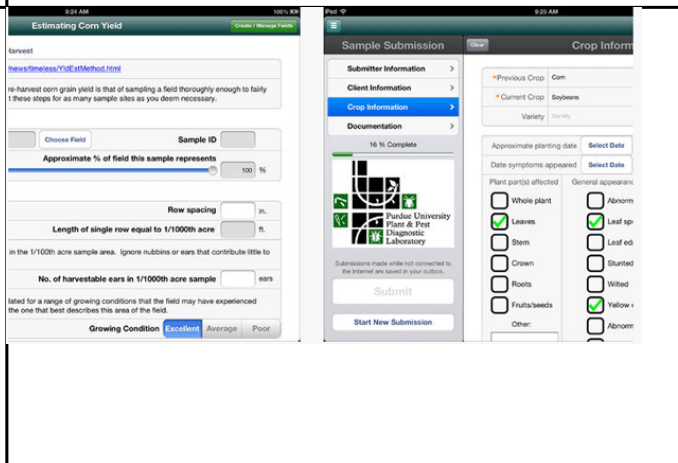
For this series of articles, we have grouped Ag-Apps into the following 10 classifications:

- **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.
- **FIELD 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.
- **GENERAL AG 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.

5. Field Guide Apps


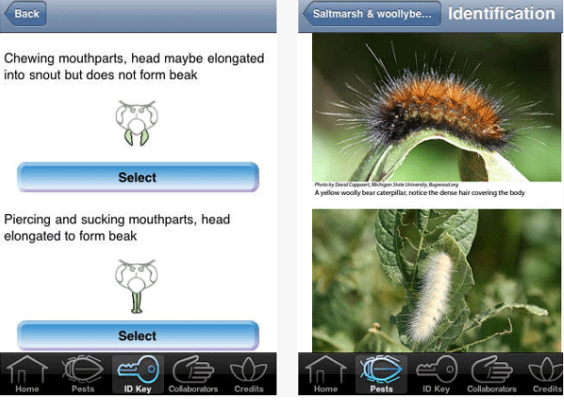

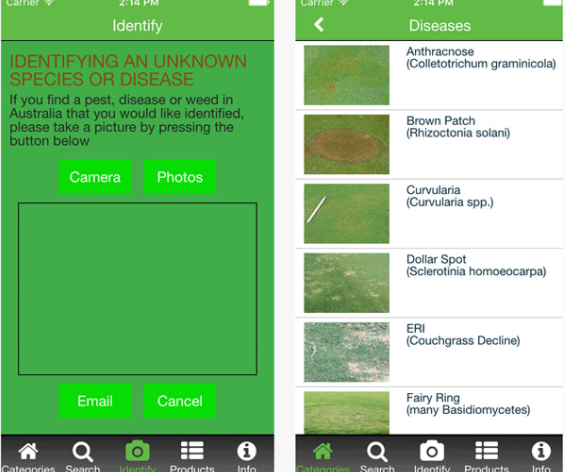

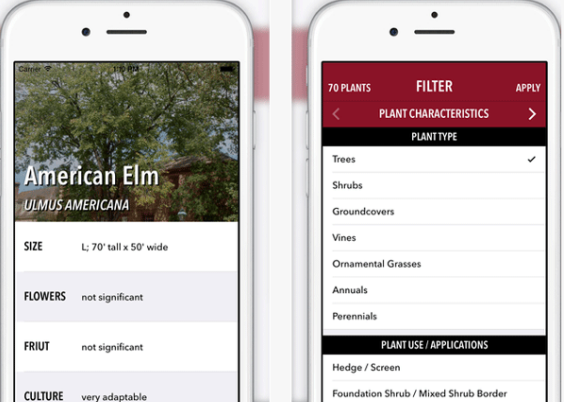
These apps are primarily utilized for assisting with certain decision-making processes (crop management: insects, diseases, weeds, and more).

Field Guide Apps

Name of App and Source	Picture	Brief description and cost	
<p>Ag-PhD Field Guide</p>  <p>Ag-PhD</p>		<p>This app allows you to browse weeds and insects by name and view photos. It also provides control recommendations.</p> <p>FREE</p>	
<p>NDSU Pest Management</p>  <p>North Dakota State University</p>		<p>This app includes information from the NDSU Extension Weed, Disease, and Insect Management Guides; including biological pest management options.</p> <p>FREE</p>	
<p>Purdue Extension Corn & Soybean Field Guide</p>  <p>Purdue University</p>		<p>This app provides information for corn and soybean production, presents a very complete field guide.</p> <p>\$12.99</p>	

MOBILE AGRICULTURAL APPS – REVIEW from KSUCROPS ©Kansas State University

Field Guide Apps

Name of App and Source	Picture	Brief description and	cost
<p>NPIPm Soybean Guide</p>  <p>South Dakota State University</p>		<p>This app presents a field guide that provides management options for insect and other arthropod pests affecting soybeans.</p> <p>FREE</p>	
<p>Turf ID Guide</p>  <p>Bayer Australia Ltd</p>		<p>This app provides detailed information on turf weeds, diseases, and insects. Presents a good database on imagery collection providing a quick identification of production issues.</p> <p>FREE</p>	
<p>Hort Plants</p>  <p>University of Arkansas</p>		<p>This app provides an image collection and database presenting plant information that covers the mid-South region of the U.S.</p> <p>FREE</p>	
<p>Seed Guide</p>		<p>This app provides information on seed purchasing decisions for corn, soybean and alfalfa. Searchable database, easy to search by name, maturity, or seed trait.</p>	

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AgReliant Genetics


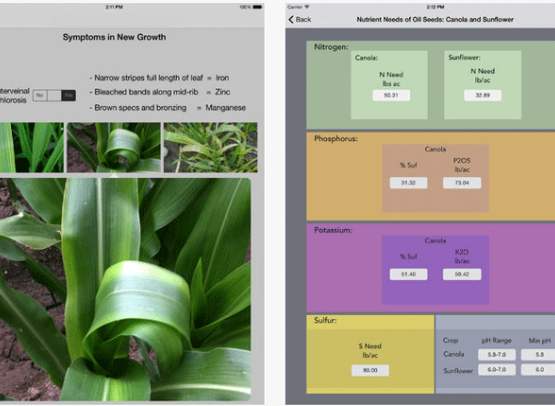

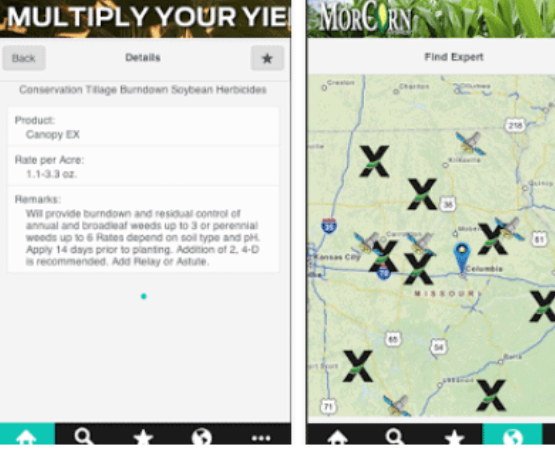


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<p>Field Guide</p>  <p>Oklahoma State University</p>		<p>This app presents nutrient removal values, a nutrient deficiency identification tool, and fertilizer calculations for most of the major crops.</p> <p>FREE</p>
<p>MFA Agronomy Guide</p>  <p>MFA Incorporated</p>		<p>This app provides market information related to major crops (corn, sorghum, wheat, soybean, rice, cotton) and pastures.</p> <p>FREE</p>

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

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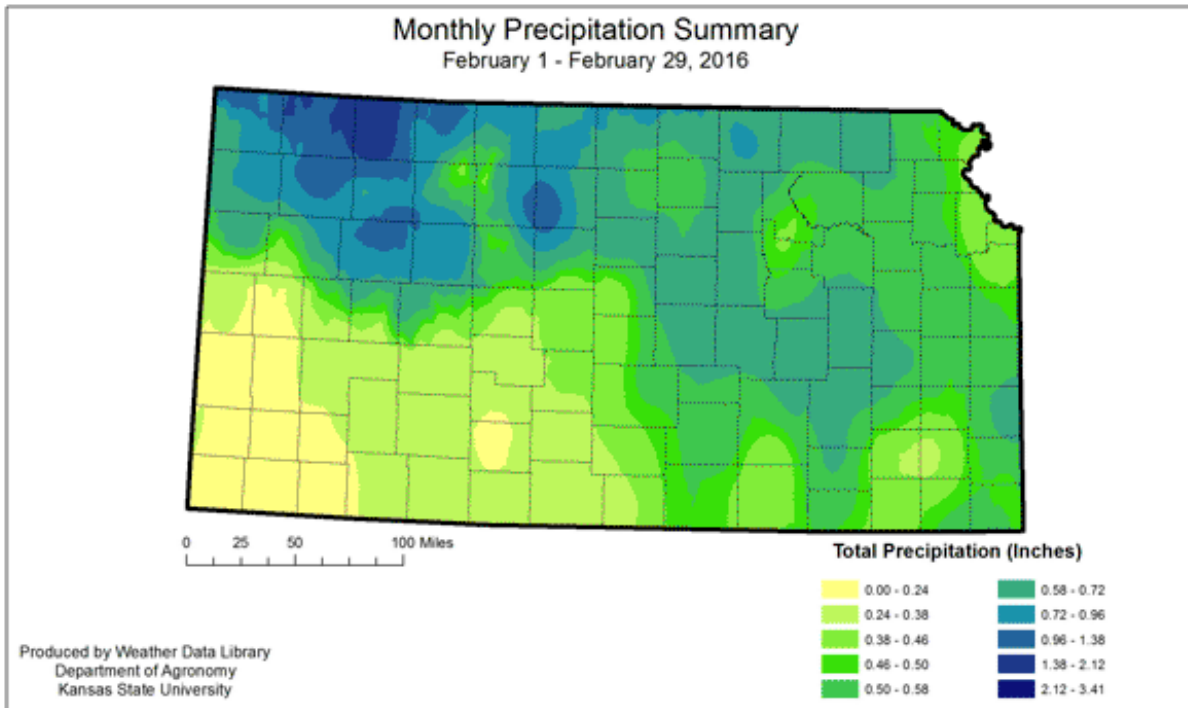
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6. Kansas weather summary for February: A month of extremes

While the overall conditions for February were both warmer and drier than normal, there was a significant change in patterns over the month. It entered on a cold, wet note with locations in western Kansas having over a foot of snow. As the system moved east, the snow switched to rain.

There were 67 daily precipitation records set on the 1st and 2nd of February. Colby 1SW and Sharon Springs set new records for daily totals in February. Colby reported 2.02 inches of liquid equivalent, while Sharon Springs reported 1.05 inches. Both records were set on the 2nd. Unfortunately, that was the only major precipitation event of the month. After the 3rd, there were only two dates on which the state average precipitation was measurable at 0.01 inches -- the 16th and the 23rd. The statewide average for February was 0.54 inches. This ranks as the 34th driest February since 1895. The Northwest and West Central Divisions were exceptions to this dry pattern. The Northwest divisional average was 1.02 inches, or 182 percent of the normal. The West Central divisional average was 0.75 of an inch, or 116 percent of normal. In contrast, the Southeast and East Central Divisions averaged just 0.47 of an inch of precipitation, which was 22 and 37 percent of normal, respectively. Still, there were 67 new daily record precipitation amounts.

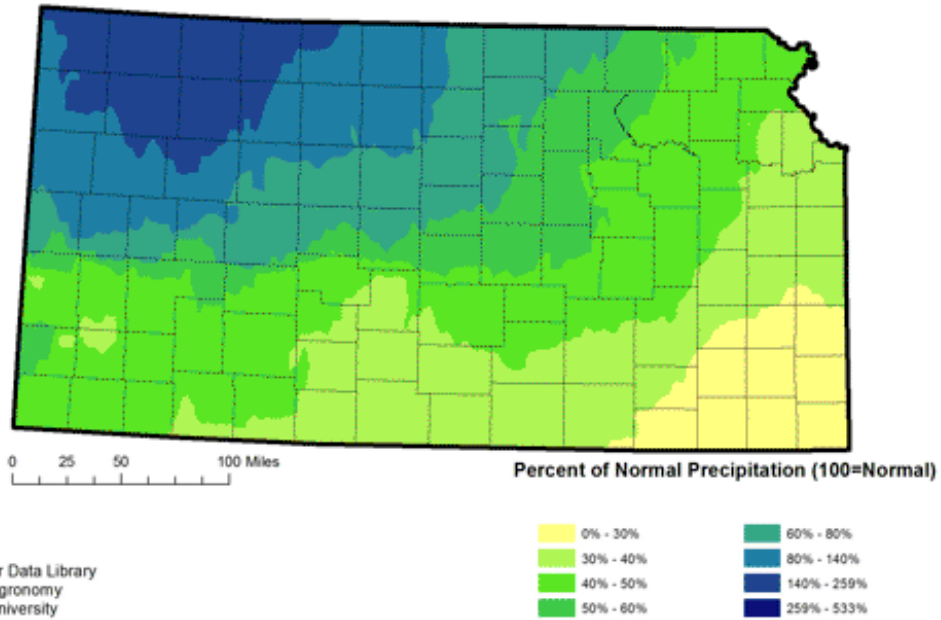


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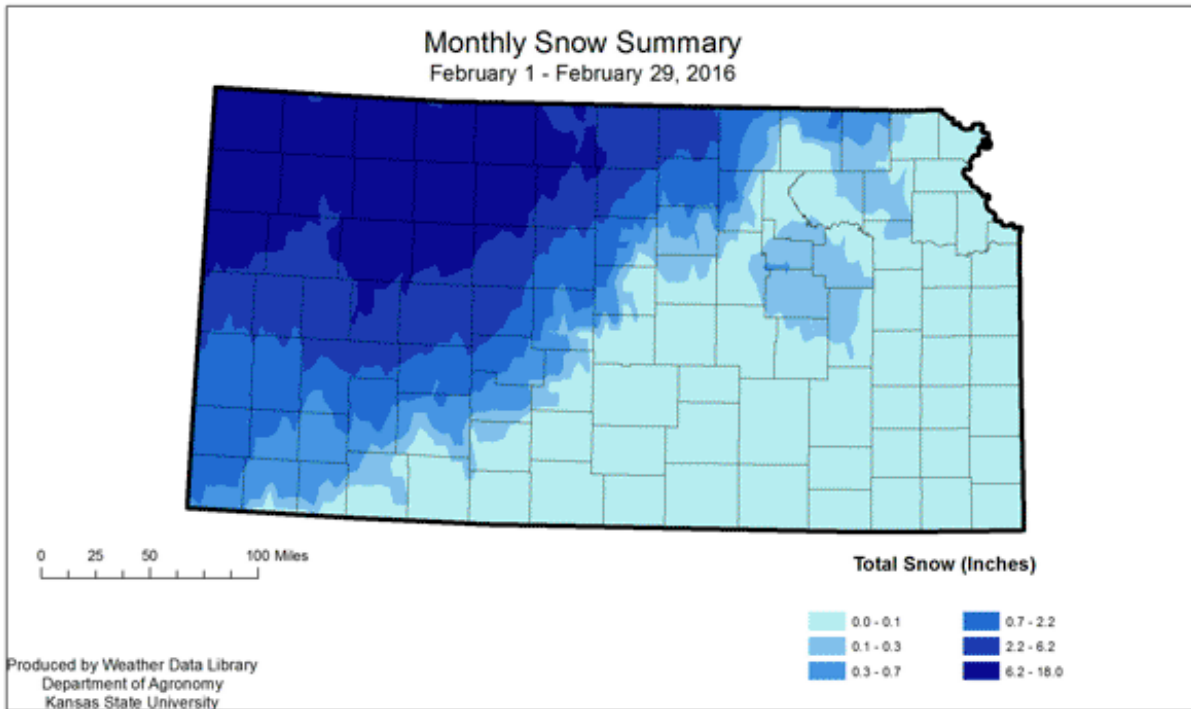
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Percent of Normal Monthly Precipitation
February 1 - February 29, 2016

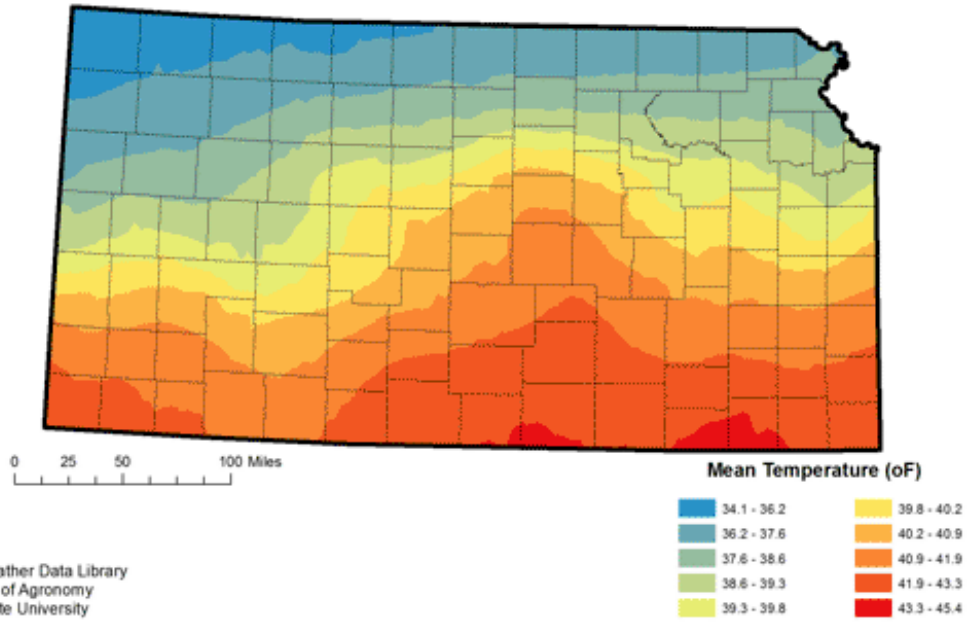


Despite the warmer-than-normal temperatures, snow was a feature during the month. The greatest 24-hour total was 14 inches at Sharon Springs, in Wallace County, on the 2nd. Oberlin 1E was the station with the greatest monthly total for the state at 17 inches.



Temperatures were warmer-than-average across the state, with departures running from 3 to 8 degrees warmer than normal. Statewide, the average temperature was 39.8 degrees F or 5.7 degrees F warmer than normal. It ranks as the 12th warmest February on record. The warmest February occurred in 1960, with an average of 45.1 degrees F. There were 120 new daily high temperature records set in February. Seventeen of those also set records as the warmest daily temperatures reported in February for those stations. The highest recorded temperature was 91 degrees F. That was reported at 3 locations -- Ashland (Clark County), Hays 1S (Ellis County), Ness City (Ness County) -- all on the 18th. In addition to the record highs, there were 64 new record warm minimum temperatures. Wilson Lake set a new record warm minimum for February. There were no new records set for either low maximum or low minimum temperatures. The coldest reading for the month was 1 degrees F, reported at Brewster 1W on the 4th.

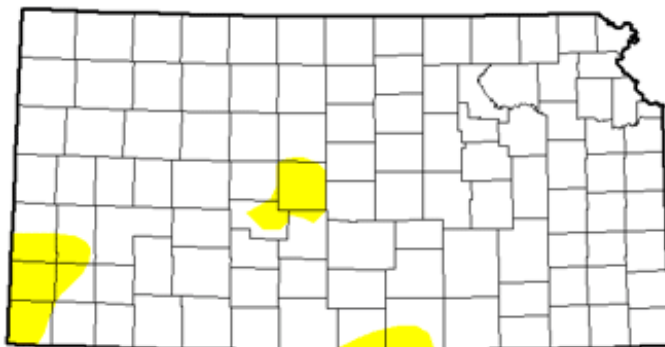
Monthly Mean Temperature
February 1 - February 29, 2016



Produced by Weather Data Library
Department of Agronomy
Kansas State University

As might be expected with the warmer and drier conditions, there was an expansion of D0, or drier than normal conditions. This was mostly seen in the Southwest, where active vegetation growth coupled with warm temperatures, high winds, and low humidity are beginning to have impacts. Abnormally dry areas remain in central Kansas. While drier-than-normal conditions were experienced across much of eastern part of the state, this is a normally low precipitation month so changes in drought designations are slow to develop. The precipitation outlook for March is for increased chances of wetter than normal. However, the short-term outlooks are for drier-than-average conditions for the first half of the month.

U.S. Drought Monitor Kansas



Author:
David Miskus
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

March 1, 2016

(Released Thursday, Mar. 3, 2016)

Valid 7 a.m. EST

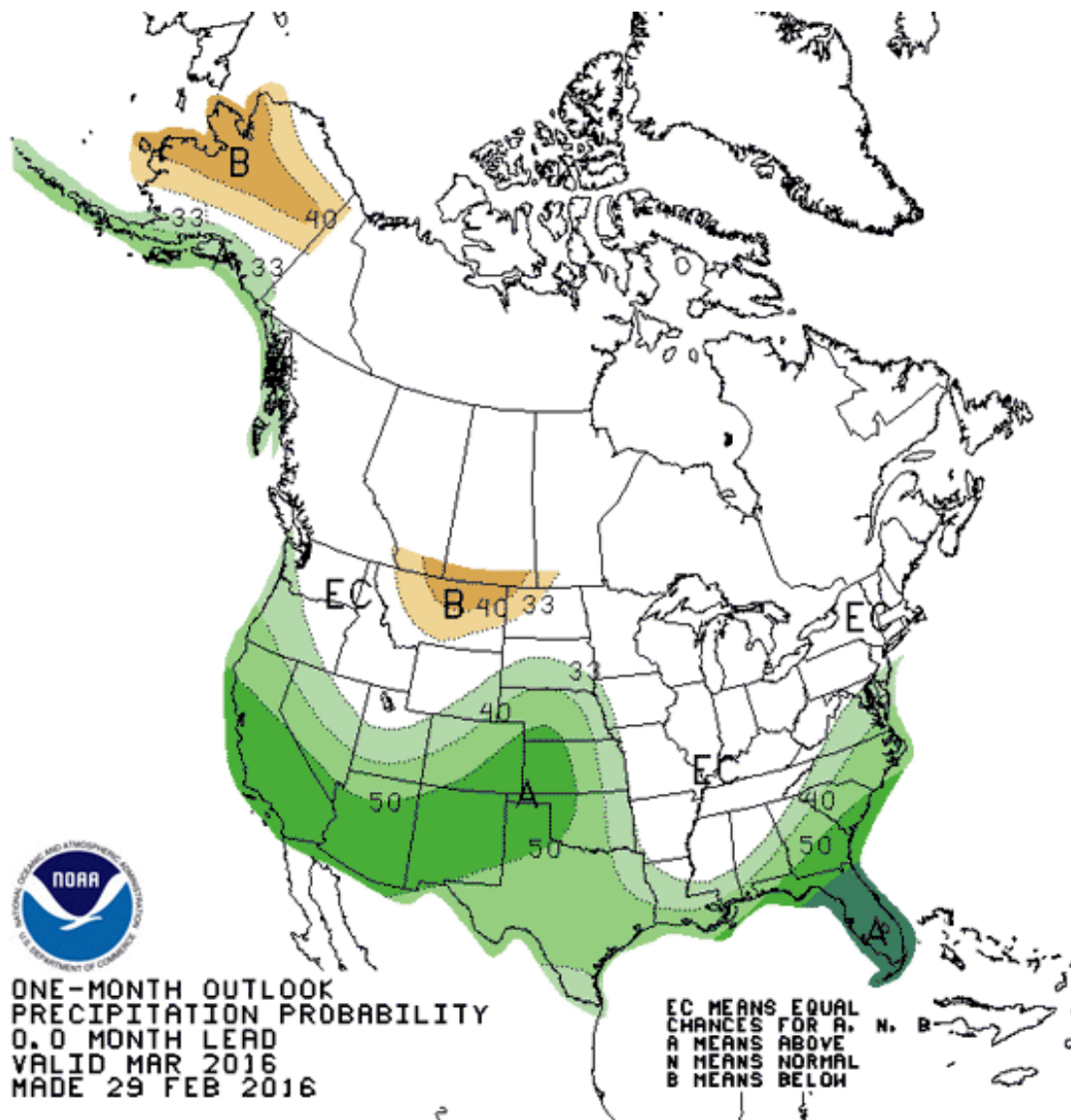
Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	94.55	5.45	0.00	0.00	0.00	0.00
Last Week <small>20/02/16</small>	98.32	1.88	0.00	0.00	0.00	0.00
3 Months Ago <small>12/12/15</small>	46.33	49.16	4.51	0.00	0.00	0.00
Start of Calendar Year <small>12/01/15</small>	97.84	2.16	0.00	0.00	0.00	0.00
Start of Water Year <small>02/01/15</small>	80.79	14.72	4.48	0.00	0.00	0.00
One Year Ago <small>03/01/15</small>	11.06	47.24	23.03	16.80	1.88	0.00

Intensity

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



Feb 2016

Kansas Climate Division Summary

Division	Precipitation (inches)			Temperature (°F)						
	Feb 2016			2016 Jan. through Feb.			Monthly Extremes			
	Total	Dep. ¹	% Normal	Total	Dep. ¹	% Normal	Ave	Dep. ¹	Max	Min
Northwest	1.02	0.46	182	1.08	0.07	107	36.8	5.0	87	1
West Central	0.75	0.13	116	0.88	-0.25	73	38.7	5.5	91	3
Southwest	0.24	-0.33	41	0.31	-0.73	29	42.0	6.2	91	6
North Central	0.59	-0.27	69	1.36	-0.13	91	38.1	5.8	87	5
Central	0.60	-0.45	57	1.37	-0.38	78	40.4	6.1	91	7
South Central	0.39	-0.83	31	0.70	-1.35	34	42.4	5.7	89	14
Northeast	0.53	-0.64	49	1.27	-0.71	66	38.3	6.1	78	14
East Central	0.47	-0.93	33	1.16	-1.18	49	39.6	5.7	78	13
Southeast	0.47	-1.33	26	1.06	-1.99	34	41.8	5.1	81	10
STATE	0.54	-0.50	63	0.98	-0.79	59	39.8	5.7	91	1

1. Departure from 1981-2010 normal value

2. State Highest temperature: 91 oF at Ashland (Clark County), Hays 1S (Ellis County), Ness City (Ness County) on the 18th.

3. State Lowest temperature: 1 oF at Brewster 4W (Thomas County) on the 4th.

4. Greatest 24hr rainfall: 2.80 inches at Oberlin, Decatur County, on the 3rd (NWS); 2.12 inches at Natoma 6.7 NNE, Osborne County, on the 2nd (CoCoRaHS).

Source: KSU Weather Data Library

Mary Knapp, Weather Data Library
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7. Comparative Vegetation Condition Report: February 23 - 29

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 09: 02/23/2016 - 02/29/2016

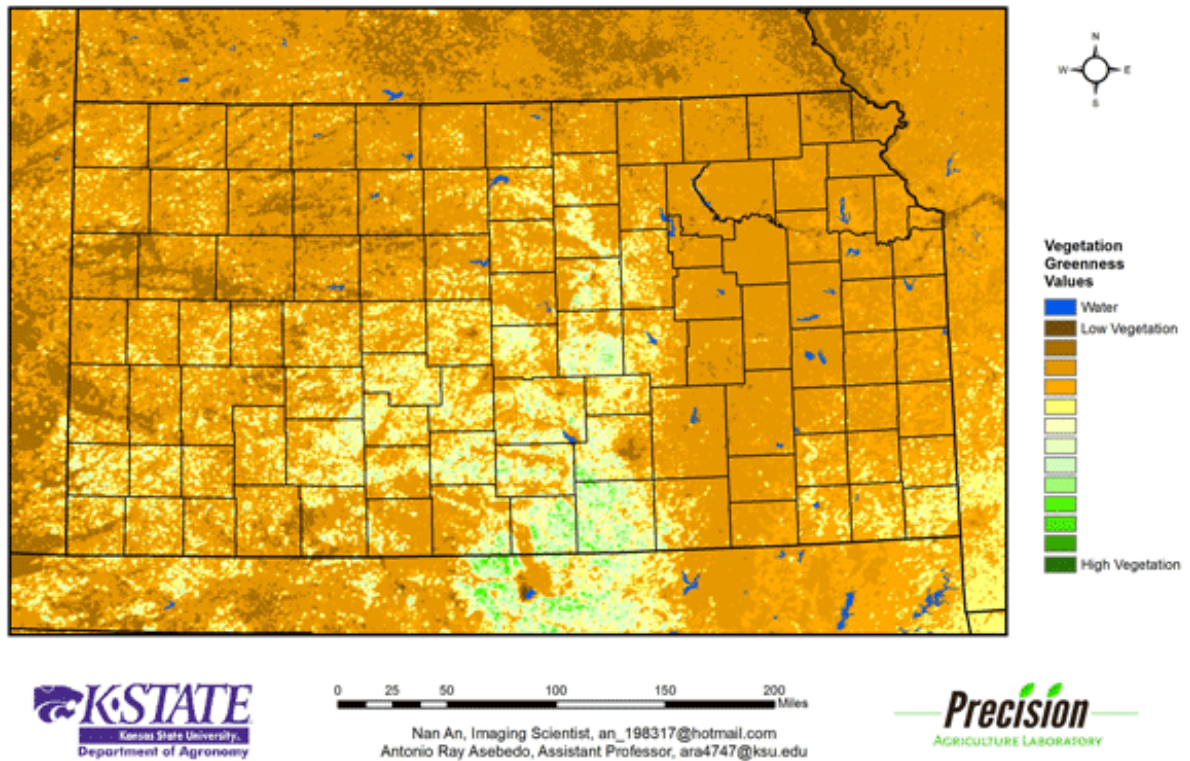


Figure 1. The Vegetation Condition Report for Kansas for February 23 - 29 from K-State's Precision Agriculture Laboratory shows that despite the warm temperatures, vegetative activity has been slow to start. The highest NDVI values are still in Sumner and Harper counties. In the Northwest Division, the area of very low vegetative activity has almost been eliminated, as the impacts from the early February snow continue to fade.

Kansas Vegetation Condition Comparison Late-February 2016 compared to the Late-February 2015

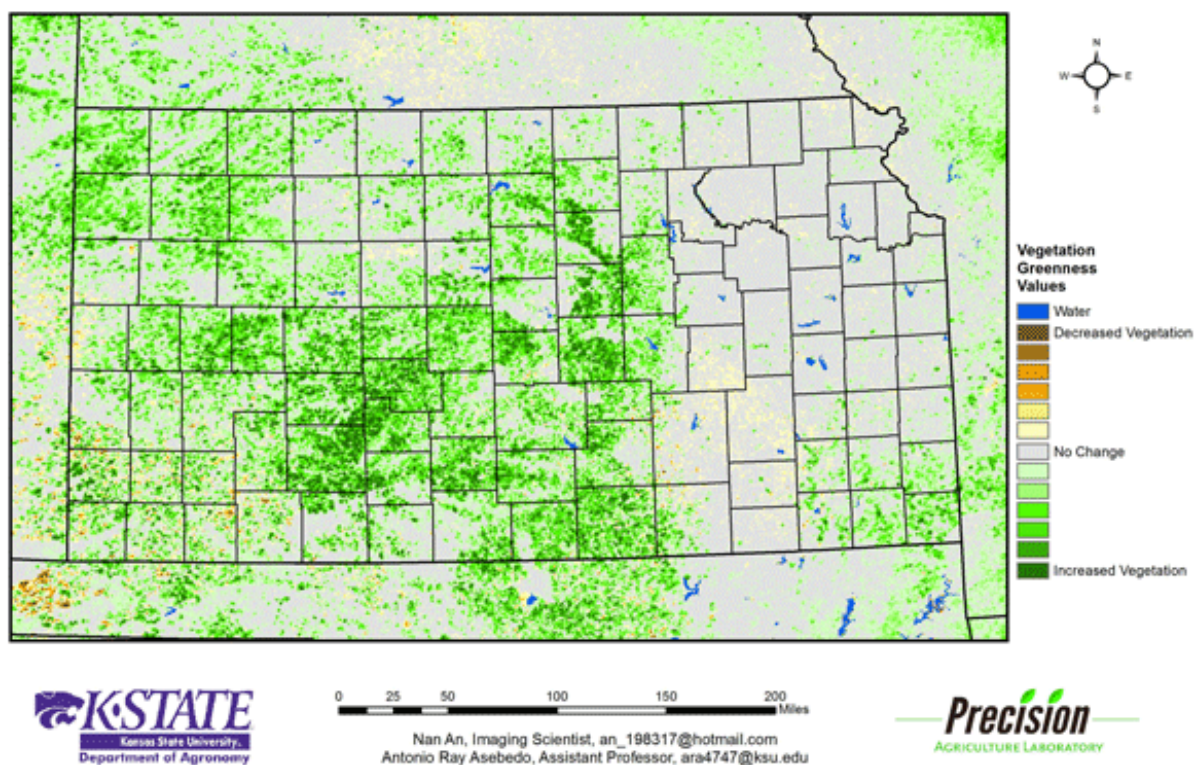


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for February 23 – 29 from K-State’s Precision Agriculture Laboratory shows a much higher level of photosynthetic activity in the western two thirds of the state. There is also a pocket of higher NDVI values in southeast Kansas, where warm temperatures have favored plant development.

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

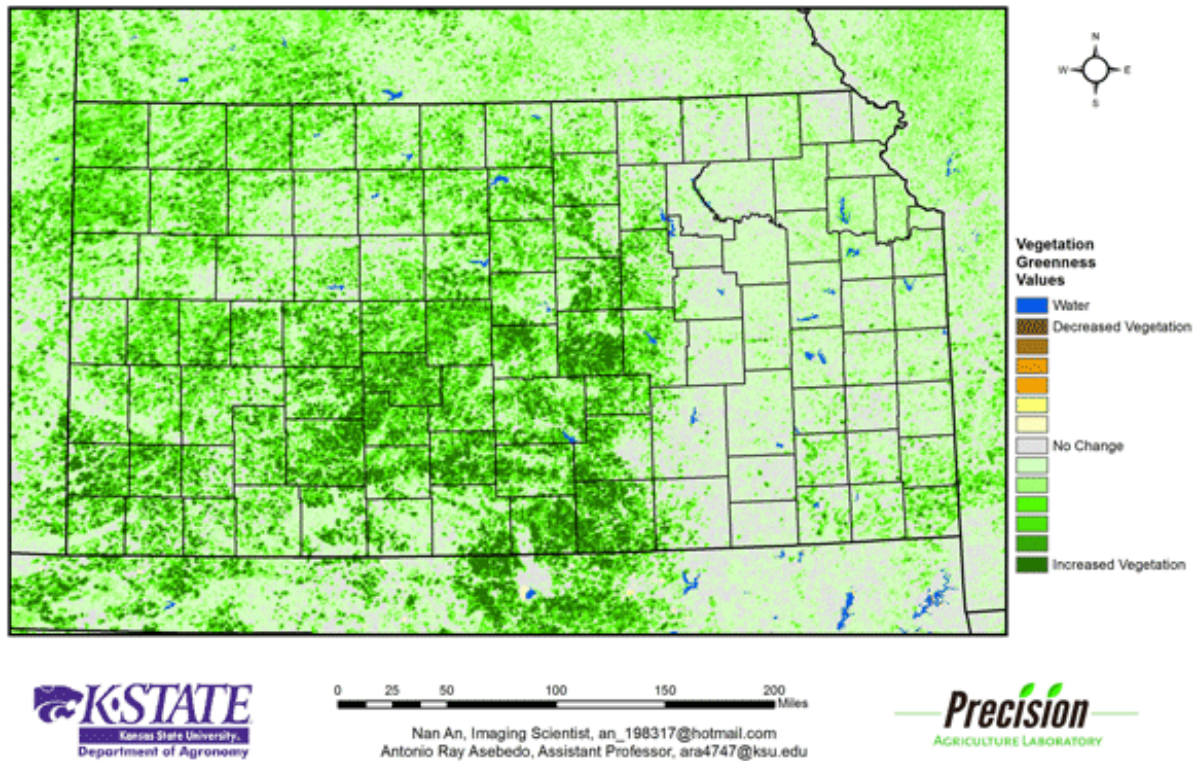


Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for February 23 – 29 from K-State's Precision Agriculture Laboratory shows that the area of above-average photosynthetic activity continues to increase. The largest areas are in central and south central Kansas. Temperatures continue above normal across the state, with the warmest departures in the southwest. Increased activity at this time of the year brings concerns about increased water demand and the potential for freeze damage to wheat, with even a normal last freeze date.

Continental U.S. Vegetation Condition

Period 09: 02/23/2016 - 02/29/2016

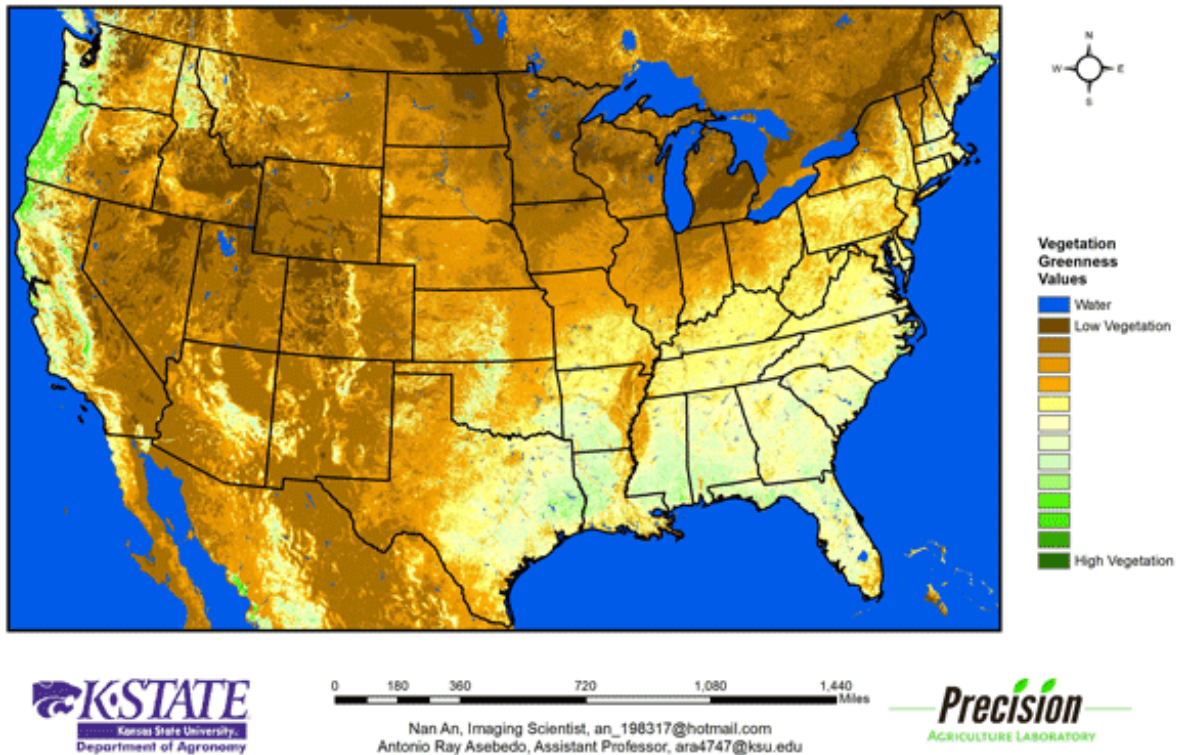


Figure 4. The Vegetation Condition Report for the U.S for February 23 – 29 from K-State’s Precision Agriculture Laboratory shows that the highest photosynthetic activity is along the Pacific Northwest and northern California. Early melt of the snow pack, particularly in Idaho and Montana, brings concerns of reduced water supplies in the spring. Lingering impacts of the December flooding are still visible in the reduced vegetative activity in the lower Mississippi River Valley, although that continues to lessen.

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

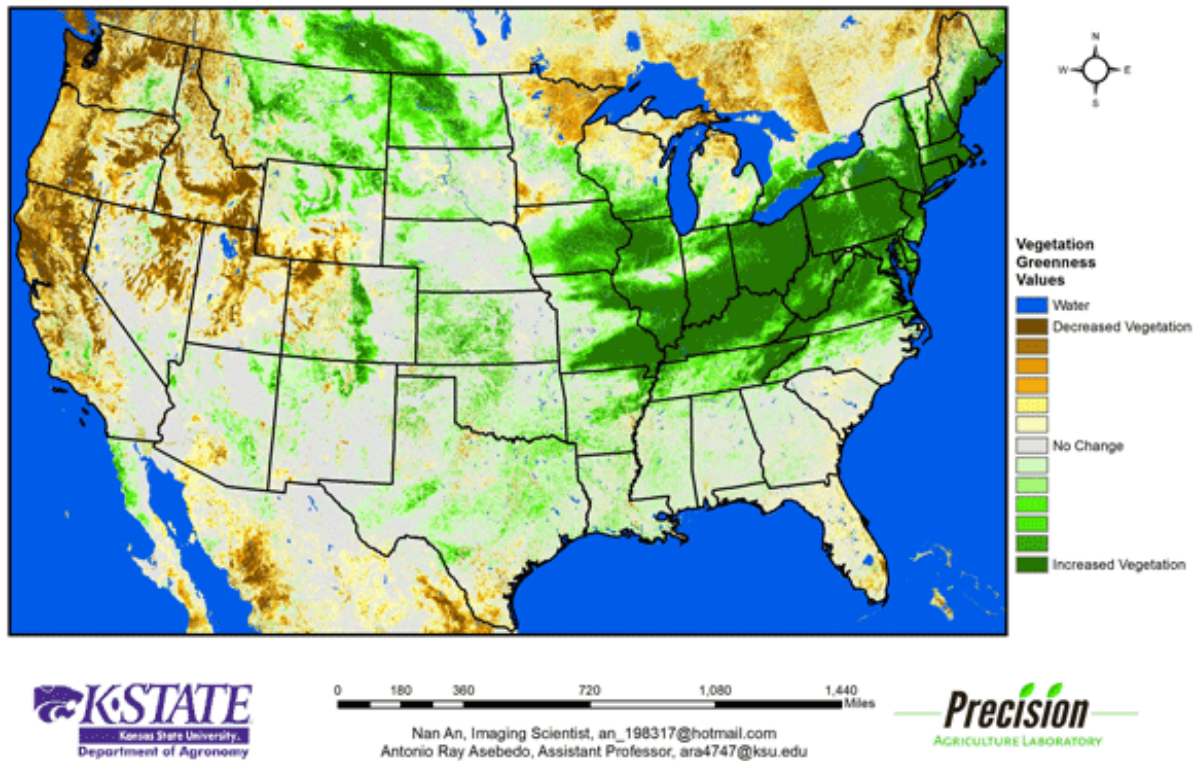


Figure 5. The U.S. comparison to last year at this time for the period February 23 – 29 from K-State’s Precision Agriculture Laboratory shows that lower NDVI values are most evident from the Pacific Northwest to the central Rockies, while much higher NDVI values are visible in the Great Lakes region. Snow continues to be the major influence on both. The Ohio River area continues to have a low-snow season, while the Pacific Northwest has a higher snow pack than last year.

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

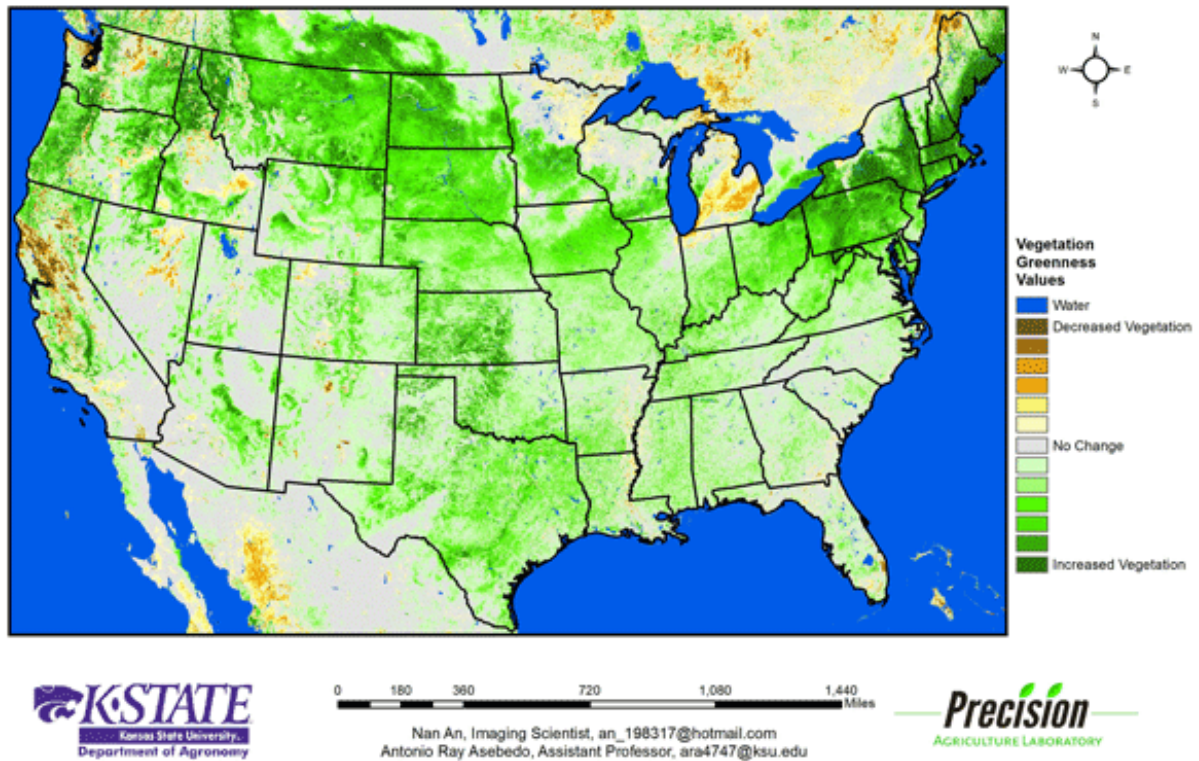


Figure 6. The U.S. comparison to the 27-year average for the period February 23 – 29 from K-State’s Precision Agriculture Laboratory shows much higher photosynthetic across much of the continental U.S. The increased vegetative activity in eastern Montana and North Dakota is of particular concern. Snow pack in these areas is below average and abnormally dry conditions continue to expand in the region. Warmer-than-average winter temperatures across the Northern Plains is also spurring plant development.

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8. Winter canola school set for March 9 in Harper

A winter canola risk management school will be held in Harper County on March 9 starting at 10:00 a.m.

After a couple of years of challenging weather, the winter canola crop of 2016 is shaping up to be one of the better ones we've seen. Good fall stands coupled with a warmer and wetter-than-normal winter tend to favor high yield potential. K-State Research and Extension wants to provide the tools necessary for canola producers to be successful with this year's crop.

The school will be held in Harper at the Harper County Fair building. Morning presentations will be followed by a lunch, sponsored by the Danville Coop. A short field trip to local canola fields will follow lunch. The school will end by mid-afternoon.

Topics to be presented in the morning session include canola varieties and winter survival, what management is important in the spring, and insect identification and management.

Mike Stamm, Canola Breeder
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