



K-STATE
Research and Extension

Extension Agronomy

eUpdate

03/31/2017

These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Corn planting in Kansas: Current and predicted soil moisture and temperatures

Corn planting in Kansas has slowed down or been delayed by recent soil moisture conditions. Soil temperatures for the past week (March 27-31) were less than or near 55 F in many areas of the state, excluding SE Kansas (Fig. 1). In addition, soil temperatures at 2-inch soil depth actually decreased by 1 to 6 degrees in many parts of the state over the past week (Fig. 2).

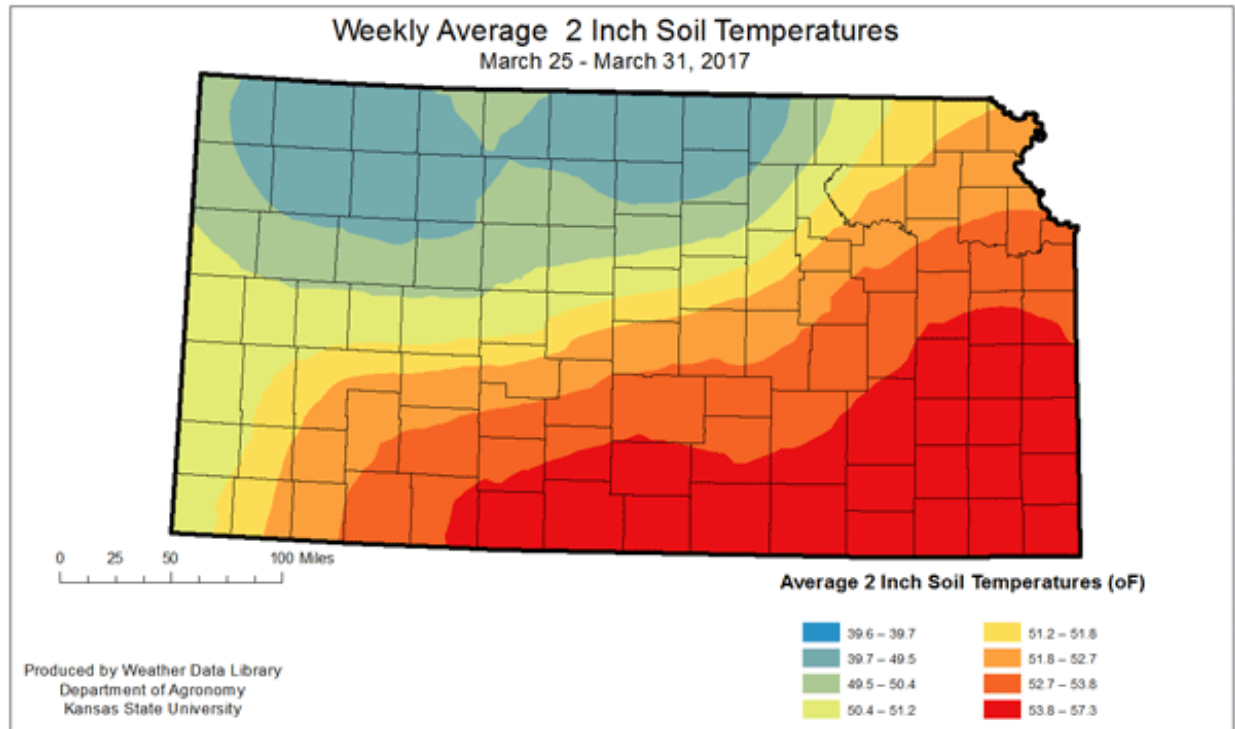


Figure 1. Average soil temperatures at 2-inch depth for the week of March 25-31, 2017.

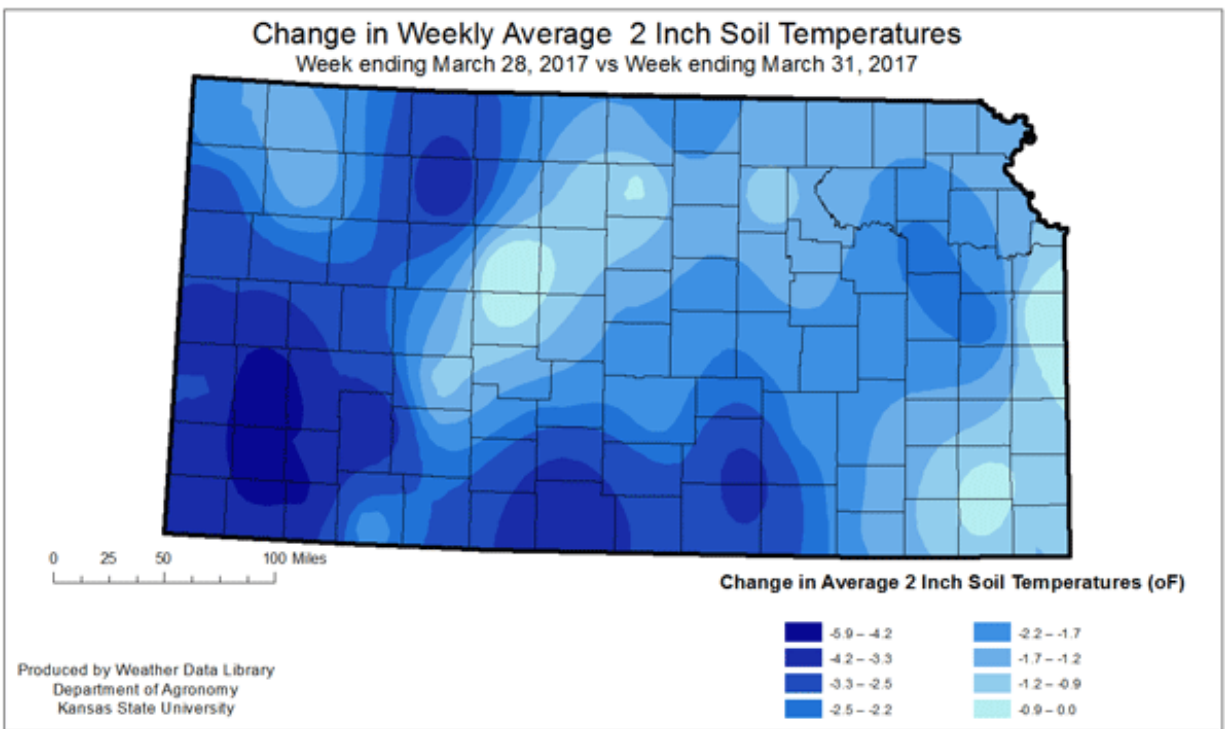


Figure 2. Changes in weekly average soil temperatures at 2-inch depth for the week ending March 31 vs. the week ending March 24.

The precipitation summary for the past week is presented in Figure 3. Several parts of the state received precipitation more than 1 inch of precipitation, except for the NC portion of the state. In some areas, precipitation was more than 4 inches, with a maximum amount close to 6.5 inches in the east central portion of the state (Fig. 3).

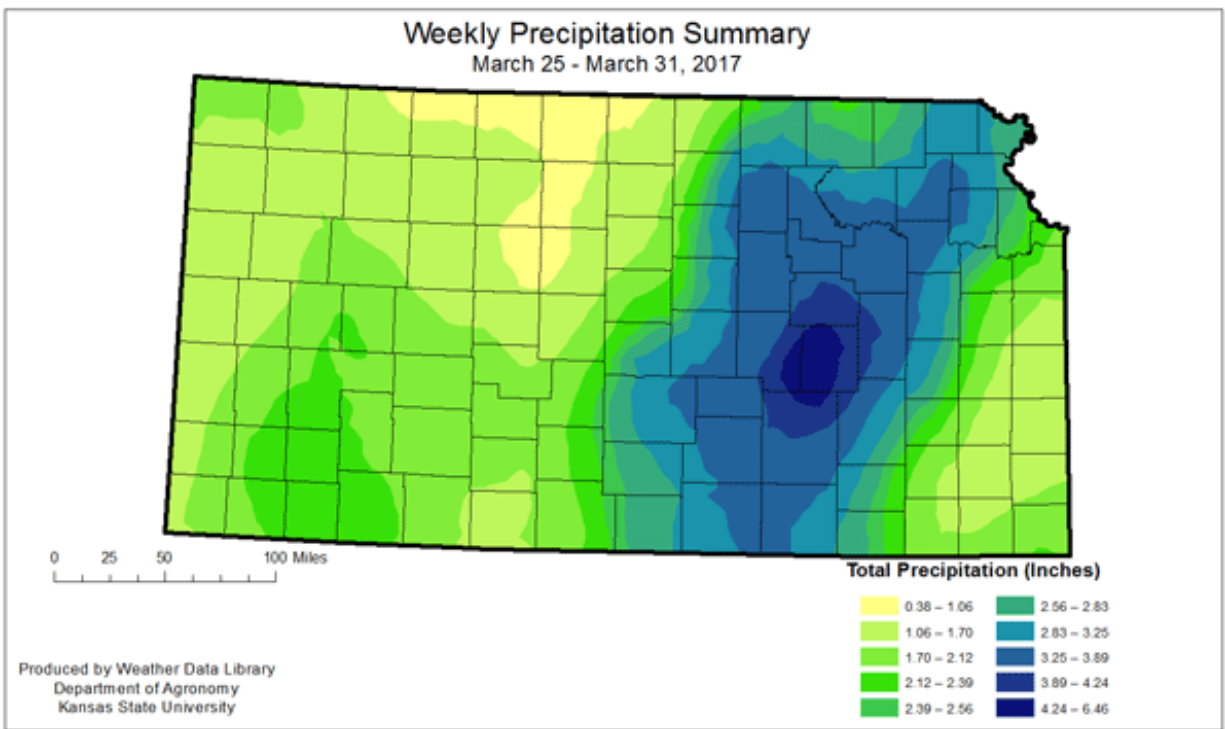
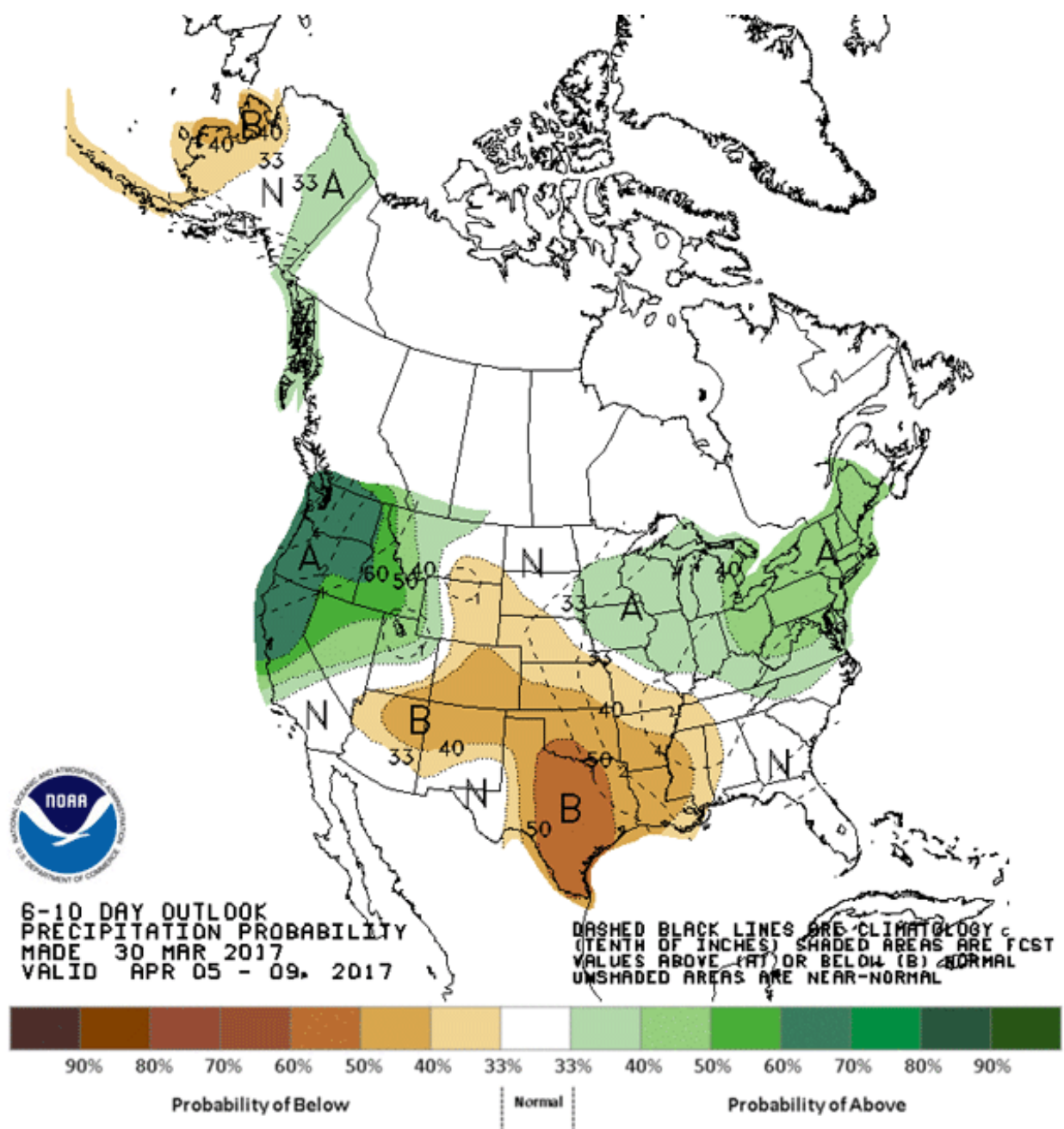


Figure 3. Weekly precipitation summary for the week of March 25-31, 2017.

The precipitation outlook for the short-term (6-10 days, April 5 to 9) calls for a below-normal probability of precipitation for the state (Fig. 4). However, the medium-term outlook (8-14 day, April 7 to 13) is calling for above-normal probabilities for precipitation for the NC and NE regions).



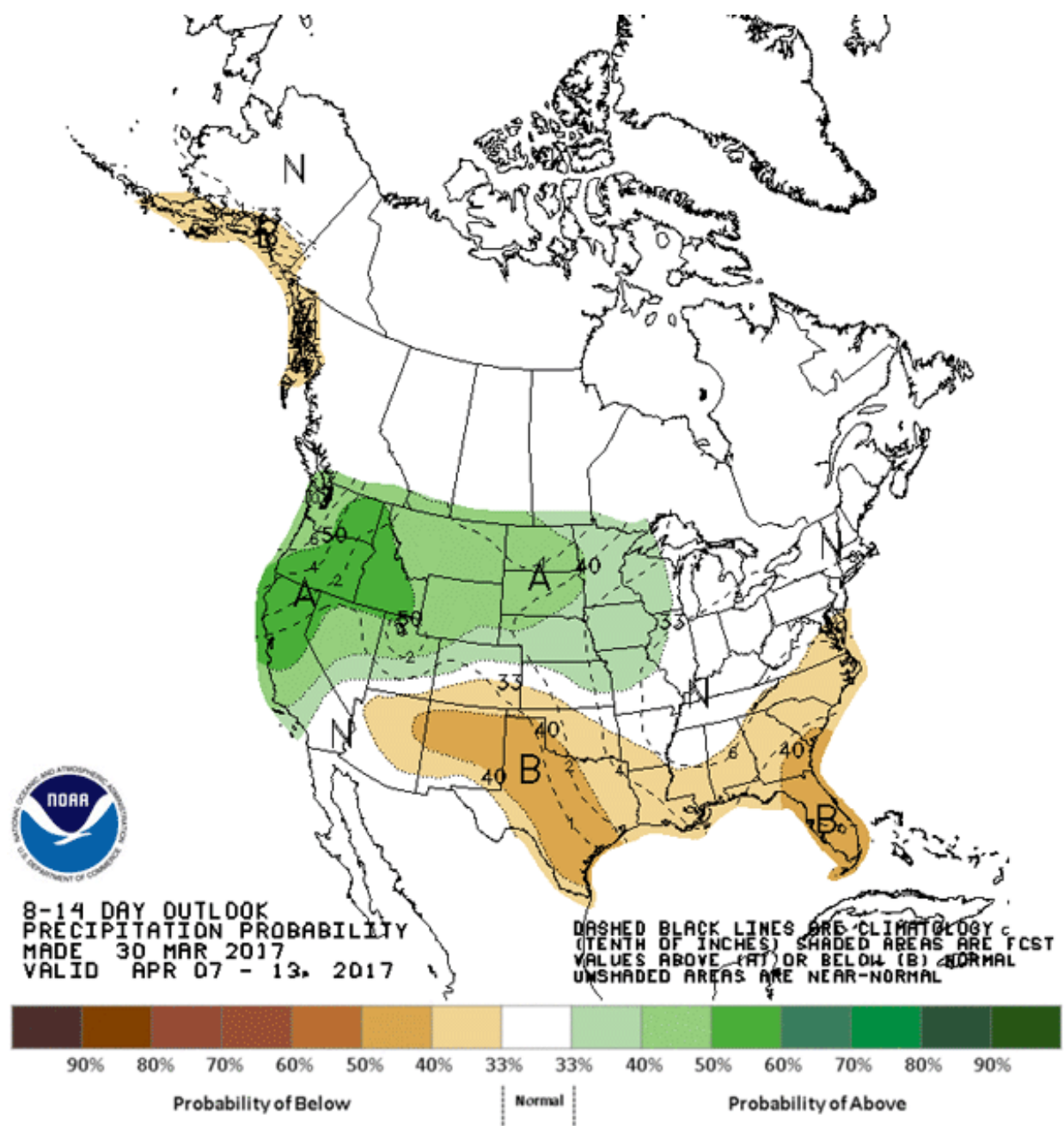


Figure 4. 6-10 (upper panel) and 8-14 (lower panel) Day Outlook Precipitation Probability from NOAA.

For the next 7-days (until April 7), the outlook for precipitation shows a probability of receiving close to 1 to 1.5 inches of rain (Fig. 5), adding to the precipitation already received this past week. This will slow down the soil drying process and impede any field work until conditions are more suitable for planting.

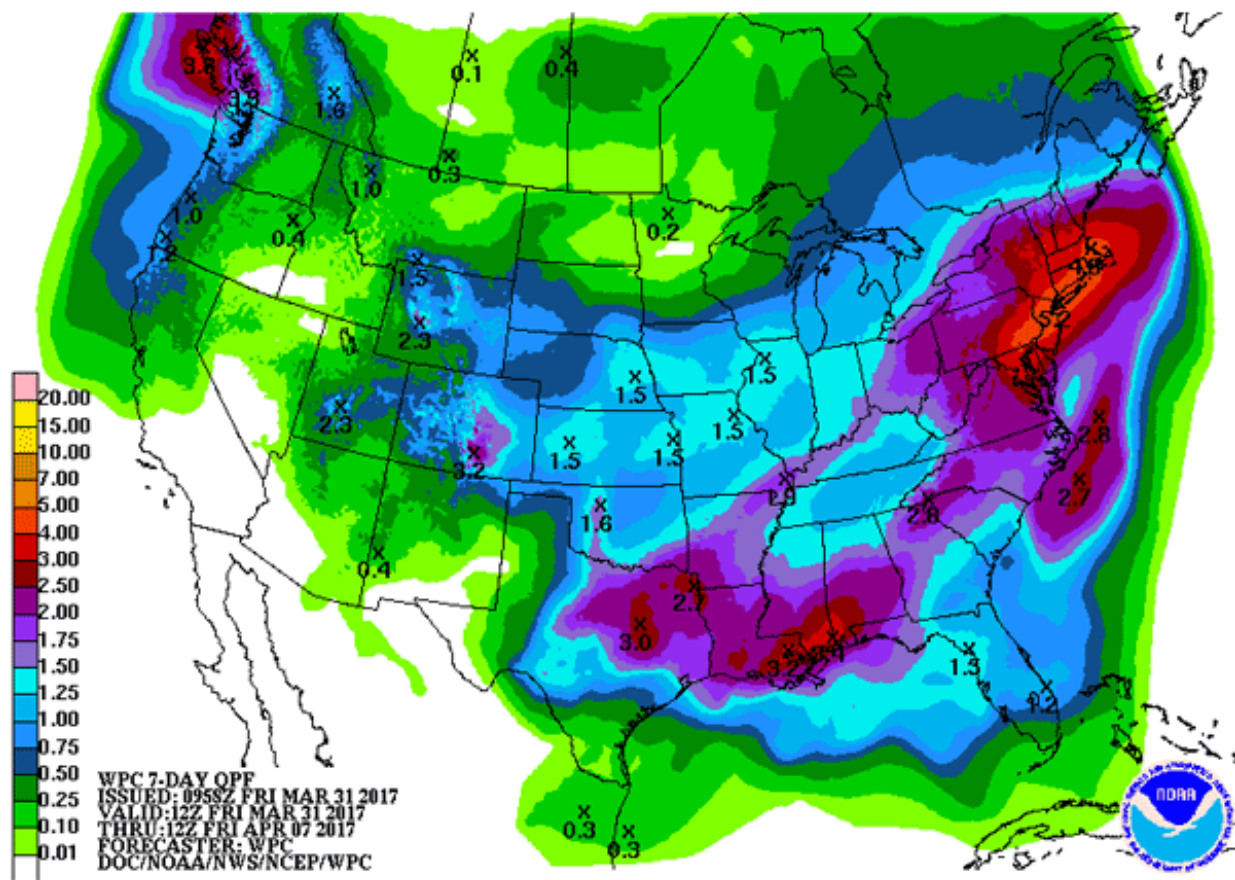


Figure 5. 7-Day Outlook Precipitation Probability from March 31-April 7, NOAA.

As a reminder, soil conditions have a large impact on corn uniformity and early-growth. Lack of uniformity in emergence due to adverse soil conditions can greatly impact corn potential yields.

It seems that wet conditions will continue to affect early planting of corn in many areas of the state. If possible, wait and plant under more favorable soil temperature and moisture conditions to guarantee a more uniform early-season stand.

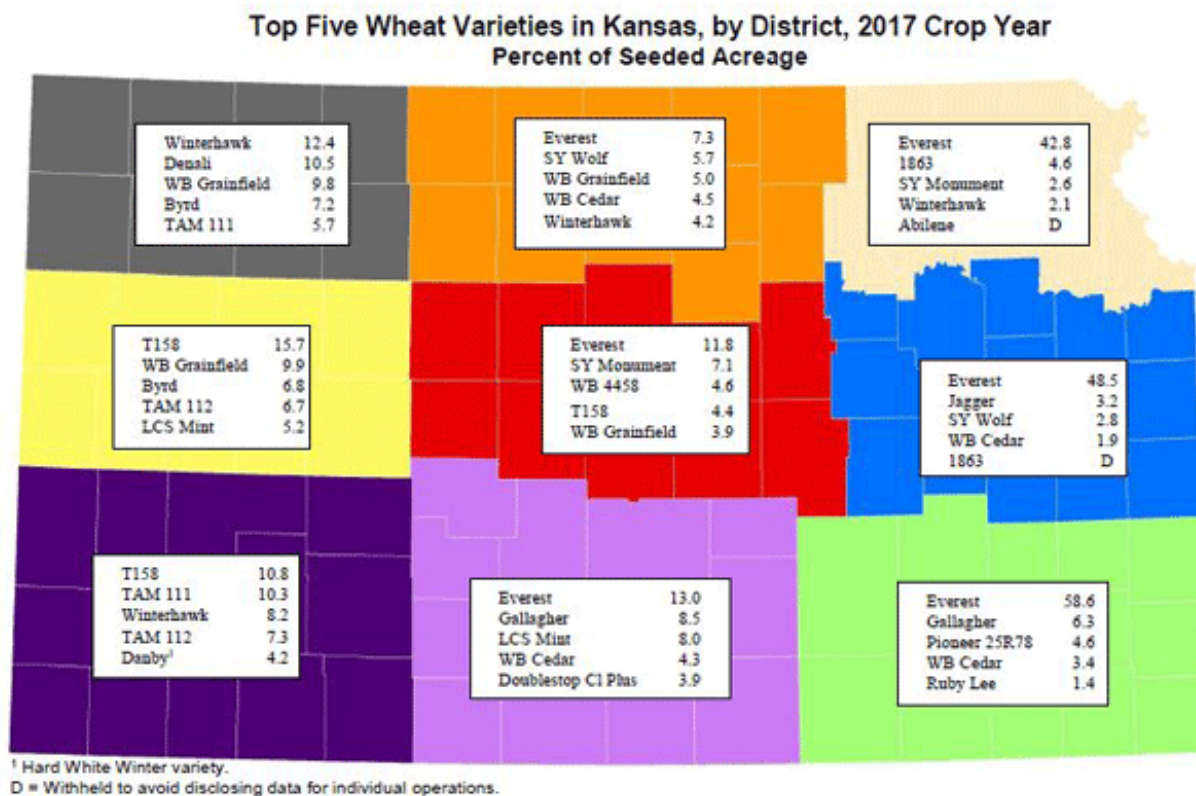
More information about the planting status of summer row crops will be provided in upcoming issues of the Agronomy eUpdate. Stay tuned!

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2. Everest remains most widely planted wheat variety in Kansas

Everest remains the most widely planted individual wheat variety in Kansas, according to the latest [Kansas Wheat Varieties](#) report from the USDA's National Agricultural Statistics Service.



Everest is a K-State variety, developed by the Manhattan breeding program and marketed by Kansas Wheat Alliance. It is the most popular variety in all six of the central and eastern Agricultural Statistics Districts. In northwest Kansas, WestBred Winterhawk is the most widely planted variety. Limagrain's T158 is the most widely planted variety in west central and southwest Kansas.

Statewide, the top five individual varieties in terms of acreage planted for the 2017 season are:

1. Everest (Kansas Wheat Alliance): 9.6 percent
2. T158 (Limagrain): 5.9 percent
3. Winterhawk (WestBred): 4.8 percent
4. LCS Mint (Limagrain): 4.3 percent
5. WB-Grainfield (WestBred): 3.9 percent
5. TAM 111 (Syngenta AgriPro): 3.9 percent

For the first time, the general category of "Blends" is actually planted on more acres than any individual variety, however. There are several different blends grown in Kansas.

Blends are especially popular in north central Kansas, accounting for nearly 30 percent of the acreage in that district. Blends are also popular in central, south central, southwest, and east central Kansas, with more than 10 percent of the acreage in each of those districts.

Distribution of Kansas Winter Wheat Varieties, by District, 2017 Crop Year

Variety	Agricultural Statistics District									State
	NW	WC	SW	NC	C	SC	NE	EC	SE	
	Percent of Seeded Acreage									
Everest	D	D	0.4	7.3	11.8	13.0	42.8	48.5	58.6	9.6
T158	4.2	15.7	10.8	2.6	4.4	1.6	*	D	D	5.9
Winterhawk	12.4	2.9	8.2	4.2	2.0	3.4	2.1	D	*	4.8
LCS Mint	1.7	5.2	2.4	3.2	3.8	8.0	D	D	0.3	4.3
WB Grainfield	9.8	9.9	1.3	5.0	3.9	0.8	D	*	*	3.9
TAM 111	5.7	4.9	10.3	D	1.6	1.8	*	D	D	3.9
Gallagher	D	*	0.9	0.6	1.4	8.5	*	*	6.3	2.8
TAM 112	3.2	6.7	7.3	*	D	0.4	*	*	*	2.7
SY Monument	2.1	1.1	1.4	3.7	7.1	1.6	2.6	0.9	1.0	2.6
Denali	10.5	5.0	0.9	1.1	2.4	0.5	D	D	D	2.5
WB Cedar	0.5	D	0.1	4.5	3.5	4.3	D	1.9	3.4	2.4
Byrd	7.2	6.8	2.2	*	*	D	*	*	*	2.1
SY Wolf	3.6	0.7	0.2	5.7	2.0	D	D	2.8	D	1.5
WB 4458	D	0.3	0.1	0.6	4.6	2.1	D	*	1.1	1.4
Doublestop CL Plus	*	D	D	0.3	2.0	3.9	*	*	D	1.3
Danby ¹	D	1.4	4.2	*	*	*	*	*	*	1.0
Jagger	D	0.6	1.4	0.5	1.8	0.6	*	3.2	D	0.9
1863	D	D	*	1.9	1.6	1.1	4.6	D	*	0.8
TAM 114	1.0	1.8	1.7	0.3	D	0.5	*	*	*	0.8
Antero ¹	D	0.8	2.8	*	*	*	*	*	*	0.6
Endurance	*	*	1.1	*	D	1.3	*	*	D	0.6
TAM 113	0.2	0.5	1.5	D	0.3	D	*	*	*	0.6
Fuller	1.8	D	D	D	D	1.0	*	*	*	0.6
PostRock	1.2	0.9	0.6	1.3	0.1	D	*	*	*	0.5
Armour	*	*	D	D	1.4	1.0	D	D	*	0.5
AP503 CL2	D	D	D	0.4	*	1.0	*	*	*	0.5
Kanmark	0.8	1.2	D	0.8	0.2	0.3	*	*	D	0.5
LCS Pistol	D	0.7	D	0.4	0.4	0.4	*	D	*	0.4
Santa Fe	*	D	*	D	D	1.2	D	*	*	0.4
T154	*	*	*	2.1	0.8	*	*	*	*	0.4
Thunderbird	2.6	D	*	*	*	*	*	*	*	0.3
TAM 103	2.4	D	D	*	*	*	*	*	*	0.3
Blends	4.0	6.8	12.8	29.5	19.6	14.2	9.8	17.0	7.2	14.3
Other Hard White Varieties	0.3	2.1	4.4	0.4	0.2	0.3	*	*	0.2	1.3
Other Hard Red Varieties	24.3	23.9	22.9	23.1	22.4	27.0	35.6	21.5	15.4	22.3
All Soft Red Varieties	0.5	0.1	0.1	0.5	0.7	0.2	2.5	4.2	6.5	0.7

* = No reports of variety in the District.

D = Withheld to avoid disclosing data for individual operations, data is included in Other Hard Red Varieties or Other Hard White Varieties.

¹ Hard White Winter variety.

The most widely planted hard white wheat in Kansas is Danby, also a K-State variety, developed by the breeding program in Hays and marketed by Kansas Wheat Alliance. White wheat is more popular in southwest Kansas than any other district.

There were 2,167 positive reports summarized for this year's Wheat Varieties survey, according to the National Agricultural Statistics Service's publication. The Wheat Variety project is funded by Kansas

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Wheat.

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3. Using new Kansas Mesonet tool to scout with confidence - alfalfa weevil

Weather requires close monitoring and is a primary driver for crop disease and pest issues. Kansas has a unique tool called the Kansas Mesonet (weather station network) which can provide weather information assisting with agriculture management decisions. Using Mesonet data, we can evaluate the presence and stage of a primary pest of alfalfa -- the alfalfa weevil.

The Kansas Mesonet has launched a new tool just in time for 2017 spring weevil concerns. Our “[Degree Day Calculator](http://mesonet.ksu.edu/agriculture/degreeday)” (mesonet.ksu.edu/agriculture/degreeday) can help with alfalfa weevil detection and scouting. This tool utilizes weather data from 56 stations across the state. The data can be used to estimate the stage of alfalfa weevils in alfalfa fields. This article briefly summarizes the Degree Day Calculator and will describe how to use it with weevil scouting.

Get Started...

1. To utilize the tool, first determine your proximity to a nearby station. While there are many stations in the state, they aren't evenly spread and there are some spatial gaps. Therefore, keep in mind a) stations south of your location may overestimate the number of degree days, north may underestimate; and b) station siting/location may greatly differ from your field level and have a resulting impact on the data. Select the closest station to you (or several stations if you want to get an average) from the map and/or list (if accessing on a mobile phone, only list is available).
2. Since we are focusing on alfalfa weevil, be sure to select “Alfalfa Weevil” from the calculation menu.
3. Weevil eggs hatch in spring, usually at anywhere between 25-300 Degree Days with scouting recommended once the number of Degree Days reaches 150-180. Degree Days begin accumulation after January 1st. Therefore, for a current analysis of estimated Days so far in 2017, we want to enter the following dates into the boxes: 2017 01 01 TO: 2017 03 27. Select “Alfalfa Weevil” in the calculation menu.
4. Press the submit button.

When to scout...

1. Upon pressing submit, the table below will populate with the station(s) you selected and the associated data. “Actual” column is the current Degree Days which have accumulated since the beginning of the period.
2. The far right column contains a “Graph” button for each station. Selecting this button will display the associated chart below the table.
3. Using the graph, the black line terminates on the right side representing the current Degree Day value. Pair the color coding of the graph with that of the legend below. Values still in the white are under recommended scouting values, however, as values increase and approach blue (150 Degree Days) the probability that eggs will start hatching increase. This is when scouting programs should be initialized. Blue or above suggests that scouting should already be occurring.

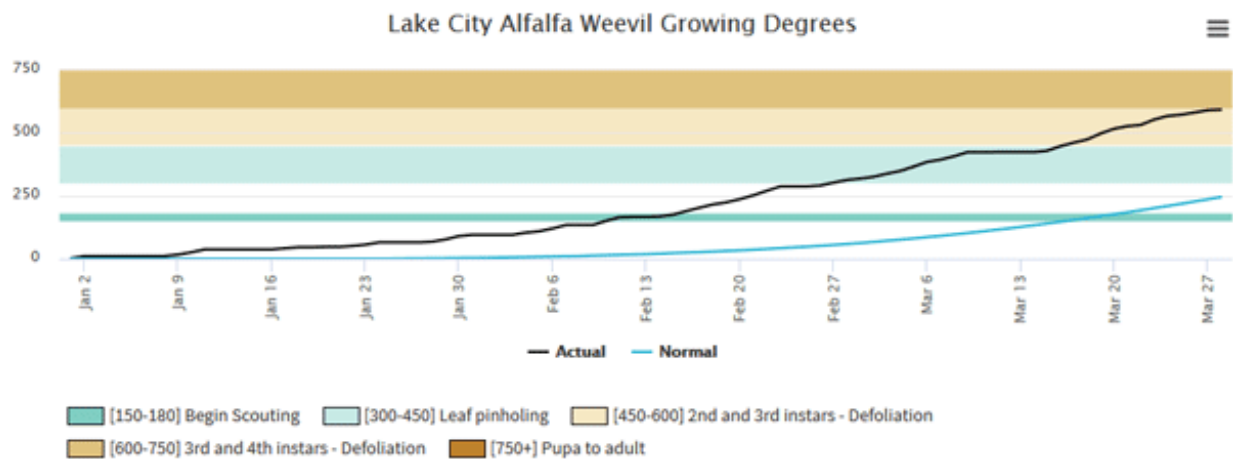


Figure 1. Graph displaying normal vs. actual accumulated degree days for the Mesonet Lake City station.

Comparing to normal...

Using "Normal" values (climatology of 1981-2010), we can estimate when the initial period may begin for weevil scouting in a "normal" or "average" year. The second data column in the table is the calculated normal for the period you entered. The "Departure" column to the right of Normal is the difference between the Actual versus the Normal. Positive values indicate that weevil progression is occurring sooner than normal and scouting will be required ahead of what "normal" climatology would indicate. Negative values indicate the opposite. This comparison to normal can also be viewed on the graph and is represented by a blue line.

2017 Conditions (as of 3/27/17)

Currently, after a very warm late winter/early spring the entire state of Kansas is averaging 400+ Degree Days. The average climatology for March 27th is 100 Degree Days over the whole state. To be more than 300 Degree Days ahead of normal at this point in the year is an incredible feat. Typically in Kansas, the climatological normal for alfalfa weevil scouting recommendations would be early April. However, with a 300 Degree Day surplus, most locations are already likely seeing leaf pinholing as a result of weevil feeding. Some consistency and variability needs to be considered in these values. Although, with such high values, it is recommended that a scouting program should be ongoing statewide at this time.

For more information, see:

[Alfalfa Weevils](#), K-State Research and Extension publication MF2999.

Kansas Mesonet (March 2017). Degree Day Calculator, Department of Agronomy Weather Data Library. <http://mesonet.k-state.edu/agriculture/degreedays>

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4. "Management Following Wildfire": Newly revised K-State publication

A newly revised version of [Management Following Wildfire](#), K-State Research and Extension publication L514, has just been published and is now available online. The author is Walt Fick, Range Management Specialist.

The following is an excerpt from this publication:

Wildfires, accidental fires, or escapes from prescribed burning, burn thousands of acres of Kansas rangeland each year. Unlike prescribed burning, wildfires are not conducted under specific conditions to accomplish defined objectives. Wildfires typically occur during the dormant season from late fall to midspring when vegetation and soil surfaces are dry, relative humidity is low, and wind velocity is above average.

The ability of rangeland to regenerate forage after a wildfire depends on previous management, time of burning, precipitation amount, soil moisture intake, and management following the fire. Subsequent rainfall is always important, but the most critical factor may be management after the burn.

Wildfire damages and losses

Soil texture and the type of plant community affect the amount of damage and how an area recovers from a wildfire. Sandy soils in Kansas typically support a mixed grass vegetation type including species such as sand/big bluestem, little bluestem, Indiangrass, switchgrass, sideoats grama, a few short grasses, and numerous forbs. Much of the rangeland in eastern and central Kansas is dominated by the mid-height and tallgrasses, if in good ecological condition. In the western half of Kansas, where annual precipitation is reduced, the heavier textured soils are often dominated by short grasses such as blue grama and buffalograss. Western wheatgrass, a cool-season perennial, also may exist in these shortgrass communities.

When conditions are windy, sandy soils may have a tendency to blow if the wildfire occurs well ahead of the growing season. Clay soils that remain bare have greater potential for puddling and runoff. As runoff increases, less water infiltrates the soil, and plant growth is reduced. Bare soils also lose significant amounts of water by evaporation. Soil erosion by wind and water may be an issue until significant plant growth occurs (Figure 1). About two-thirds of the total plant growth is below ground and that helps stabilize soils to a certain extent.



Figure 1. Early revegetation on sandy soil following a March 24, 2016, wildfire in Barber County, Kansas.

Wildfire can damage grasses and other plant species. The crowns of plants often survive a wildfire and regrow, but some can be damaged if burned when soil and air conditions are dry. If litter remains after the fire, less damage will have occurred to the plant crowns. Areas with heavy litter at the time of the fire will probably have less vegetative cover and reduced yields compared to areas with light amounts of litter.

Plant communities dominated by rhizomatous species such as big bluestem, Indiangrass, and switchgrass are less likely to be damaged by fire compared to bunchgrasses and sod-forming species. The rhizome is located below the soil surface and protected from the fire, whereas the growing points of bunchgrasses such as little bluestem or short grasses such as buffalograss and blue grama are located at or near the soil surface.

March wildfires in the Hays, Kansas area on shortgrass rangeland resulted in a 65 to 77 percent reduction in yield the first growing season after the fire. Second-season grass yields were still reduced to 39 percent of normal. Western ragweed numbers and yields were increased dramatically in one study, but not in the other. Little bluestem yield was reduced 49 percent by a March wildfire.

Western wheatgrass is generally increased by prescribed burning in April, but was reduced by a March wildfire. A March wildfire was more damaging to the vegetation than was a November wildfire. Reduced yields and vigor of grasses following wildfire may encourage weed invasion. Noxious weeds such as musk thistle and cool-season grasses such as Japanese brome and little barley may increase following wildfire. Trees such as eastern redcedar and others may be killed by wildfire. On rangeland, this might be considered a good thing. Shrubs, such as wild plums, sand sage, and others may be damaged by fire but generally resprout.

Damages caused by wildfires can be catastrophic, including the loss of human life. Loss of homes, buildings, livestock, wildlife, and fences can result in damages in the millions of dollars. Additional costs are incurred for putting the fire out.

Stocking rates on burned areas

Burned areas affect grazing distribution and attract livestock from unburned areas. The new growth in burned areas is more palatable and higher in forage quality. Consequently, additional management may be necessary to control grazing.

The time the wildfire occurs influences management decisions. When wildfires occur between late June and frost, the major consideration is to protect the plants from overuse. Immediate removal of the grazing animals is usually necessary. This permits regrowth and allow plants to accumulate food reserves before winter. Some grazing can occur if the level of defoliation is managed.

Wildfires occurring between fall frost and mid- March leave the soil bare until spring growth. Forage yields may be reduced, and a reduction in stocking rate is often advised.

Between mid-March and June, wildfires generally do not reduce forage production. If conditions are dry, however, regrowth will not occur, and stocking rate must be reduced. Wildfires at this time may change plant composition of the grazing land.

On sandy soils, blowouts should be controlled as soon as possible. Mulching with manure, straw, or hay free of noxious weeds, along with reseeding can stabilize the blowout area. Fencing of blowouts restricts livestock traffic and speeds recovery.

Table 1. Stocking rate guidelines for pastures burned by wildfire occurring any time other than late spring.

Area	Year after wildfire	Stocking Rate	Comments
Flint Hills and east	1	75-100%	Use lower rates during lengthy droughts
	2	normal	
Central Kansas	1	65-70%	Use lower rates during lengthy droughts
	2	90-100%	
	3	normal	
Western Kansas	1	50%	Use lower rates during lengthy droughts
	2	75%	
	3	normal	

Grazing management

Several grazing management options exist after a wildfire. Each pasture within a burned area is unique, but certain guidelines can be followed. Areas overgrazed and in low vigor prior to a wildfire will take longer to recover. If possible, delay grazing to allow time for regrowth to occur following a wildfire.

If a wildfire occurs where prescribed burning is practiced, burn the areas that were untouched by the

wildfire in late spring, when the desirable grass species have 1-1.5 inches of new growth, to encourage grazing of the entire pasture. Observe where the animals are grazing, and use grazing distribution tools such as salt, mineral, and oilers to attract cattle to underused areas.

In order for forage plants to recover, it usually will be necessary to reduce stocking rates on the burned area. Table 1 provides guidelines for adjusting stocking rates, but should be modified if the burn or weather conditions are adverse.

If a wildfire occurs where prescribed burning is not practiced, management decisions will be based on when the pasture was burned, how much was burned, and where livestock water is located. Possible management options are illustrated in Figure 2 and described in the following scenarios.

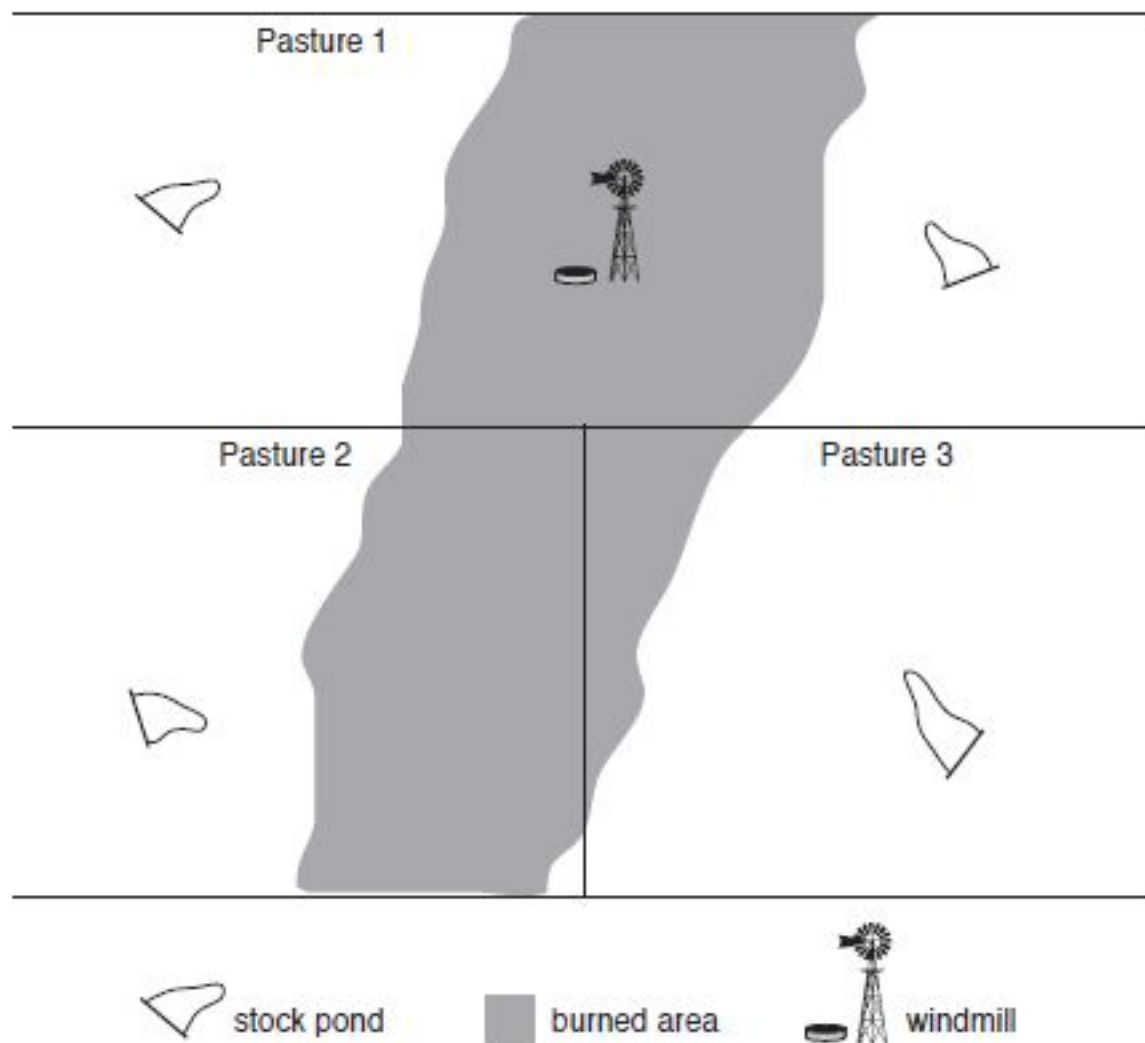


Figure 2. An example of a wildfire for considering management options.

Pasture 1. A livestock watering source exists in each part of the pasture. An electric fence can be used to divide the pasture into three management areas, one part burned, two parts unburned. Adjust the stocking rate in the burned area as suggested in Table 1. Another option would be to implement patch-burn grazing. This is accomplished by not fencing out the burned area. Livestock will concentrate on the burned area, but their grazing use will change in subsequent years as a

different part of the pasture is burned.

Pasture 2. With only one livestock watering source, the decision is whether to manage the burned or the unburned area. If the unburned area is larger, separate the two with an electric fence and stock the unburned area at the normal rate. If the burned area is larger, two choices exist: Manage only the burned part by reducing the stocking rate; or establish an alternate water source, fence the area and manage it similarly to Pasture 1. If the water source in Pasture 2 were in the burned part, the unburned area would not be used unless the area was fenced and another water source established or a fenced **lane was added to allow watering from the unburned area.**

Pasture 3. When only a small portion of the pasture is burned, fence it off and reduce the stocking rate on the unburned portion accordingly.

Other Options. If feasible, mowing unburned areas in the early spring can encourage livestock to move from the burned area; however, do not mow in August or September. Early intensive grazing is another option for burned areas. Removing all livestock from the pasture by mid-July provides late-season rest and time for the desirable grasses to replenish root reserves. Which option to use will depend on individual situations.

Source: [Management Following Wildfire](#), K-State Research and Extension publication L514

5. Comparative Vegetation Condition Report: March 21 - 27

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

The objective of these reports is to provide users with a means of assessing the relative condition of crops and grassland. The maps can be used to assess current plant growth rates, as well as comparisons to the previous year and relative to the 27-year average. The report is used by individual farmers and ranchers, the commodities market, and political leaders for assessing factors such as production potential and drought impact across their state.

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

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

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

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

Kansas Vegetation Condition

Period 13: 03/21/2017 - 03/27/2017

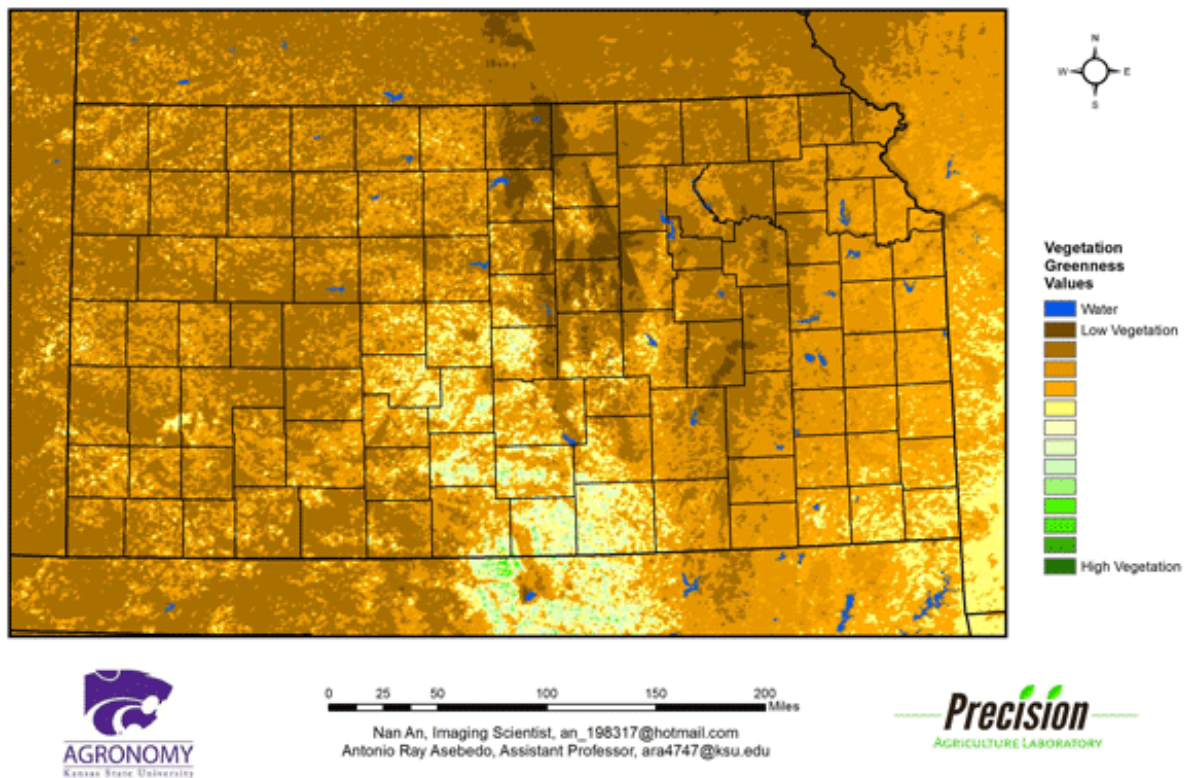


Figure 1. The Vegetation Condition Report for Kansas for March 21 – March 27, 2017 from K-State’s Precision Agriculture Laboratory shows only light photosynthetic activity during the period. The little vegetative production is mainly in south central Kansas, although it continues to expand northward. The low NDVI values in north central Kansas are due to persistent cloud cover.

Kansas Vegetation Condition Comparison
Late-March 2017 compared to the Late-March 2016

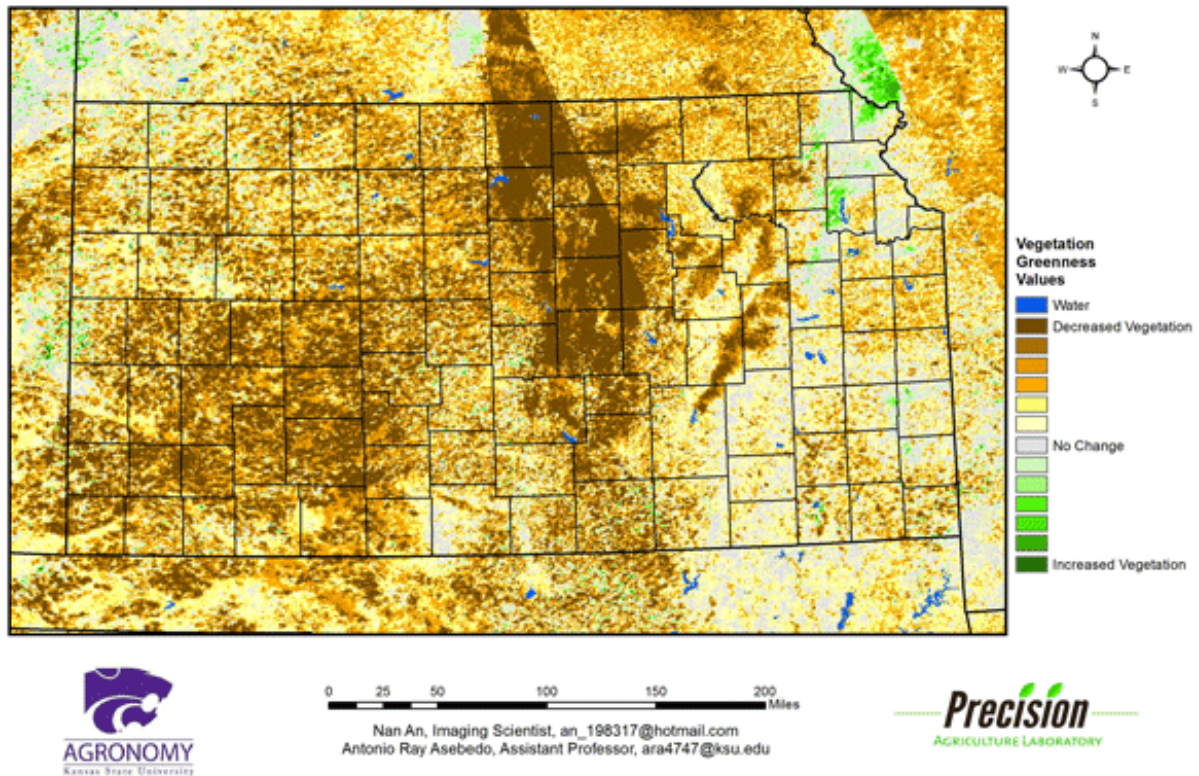


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for March 21 – March 27, 2017 from K-State’s Precision Agriculture Laboratory shows much lower NDVI values across most of Kansas. The winter wheat is less advanced this year than last, particularly in western Kansas, where dry fall conditions hampered establishment. In north central Kansas persistent cloud cover accounted for reduced NDVI values.

Kansas Vegetation Condition Comparison
Late-March 2017 compared to the 28-Year Average for Late-March

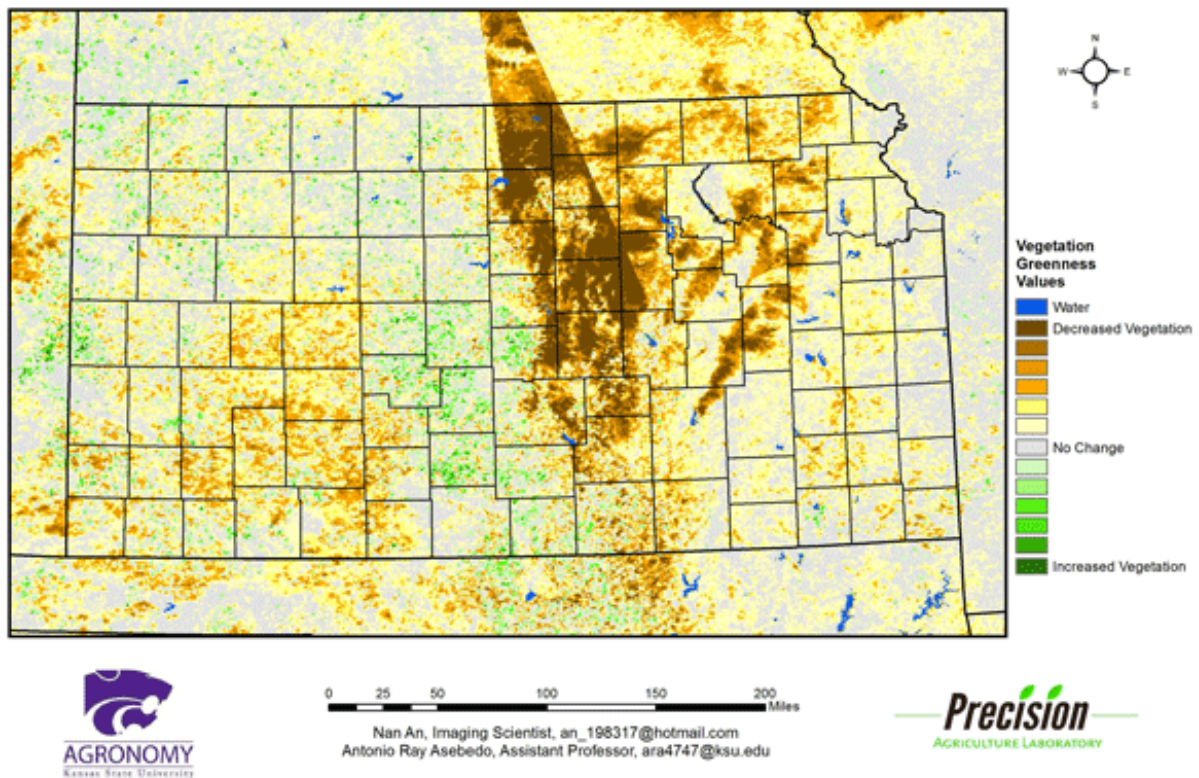


Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for March 21 – March 27, 2017 from K-State's Precision Agriculture Laboratory much of the state has below-average photosynthetic activity. The highest NDVI values are in the central and south central parts of the state, where precipitation has been more favorable. The band of much-below-average NDVI values visible in parts of north central and central Kansas is largely an artifact of persistent cloud cover.

Continental U.S. Vegetation Condition

Period 13: 03/21/2017 - 03/27/2017

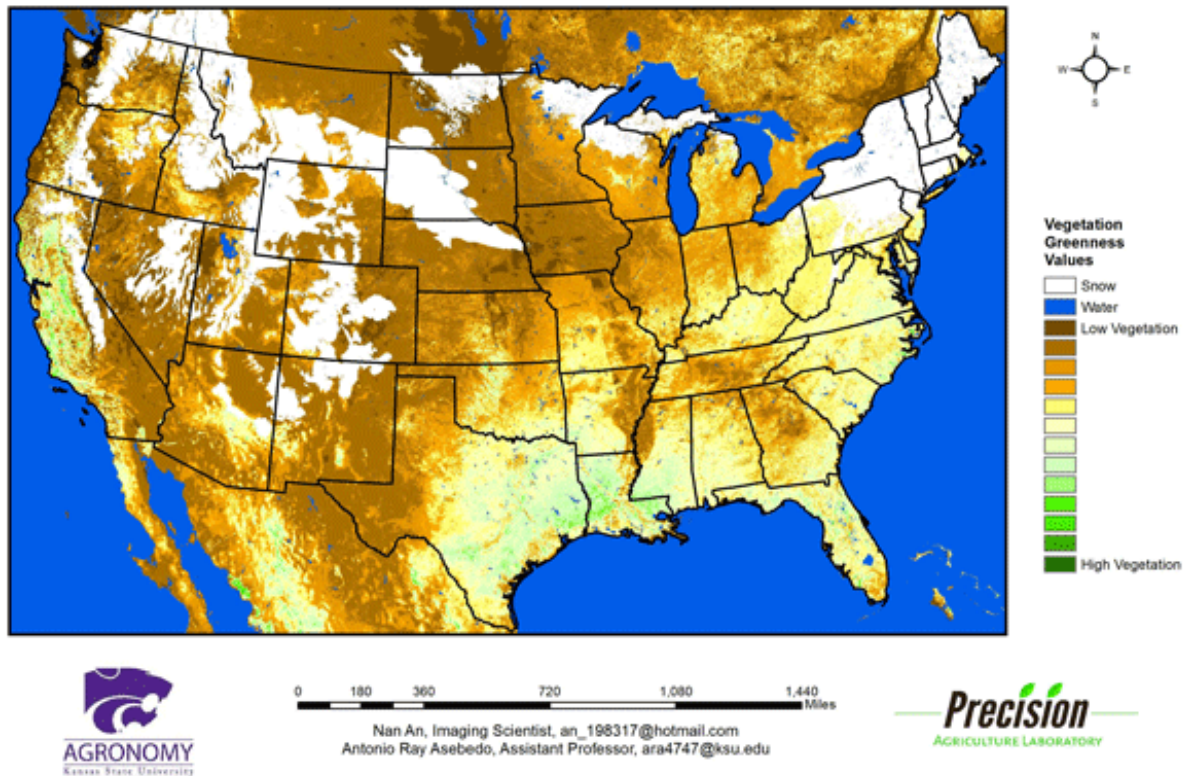


Figure 4. The Vegetation Condition Report for the U.S for March 21 – March 27, 2017 from K-State’s Precision Agriculture Laboratory shows an area of high NDVI in the South, particularly in east Texas and Louisiana. Snow coverage continues to shrink, and was mostly in the Upper Midwest and New England. Parts of Upstate New York had relief from the snow deficit that has been present for most of the winter.

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Continental U.S. Vegetation Condition Comparison Late-March 2017 Compared to Late-March 2016

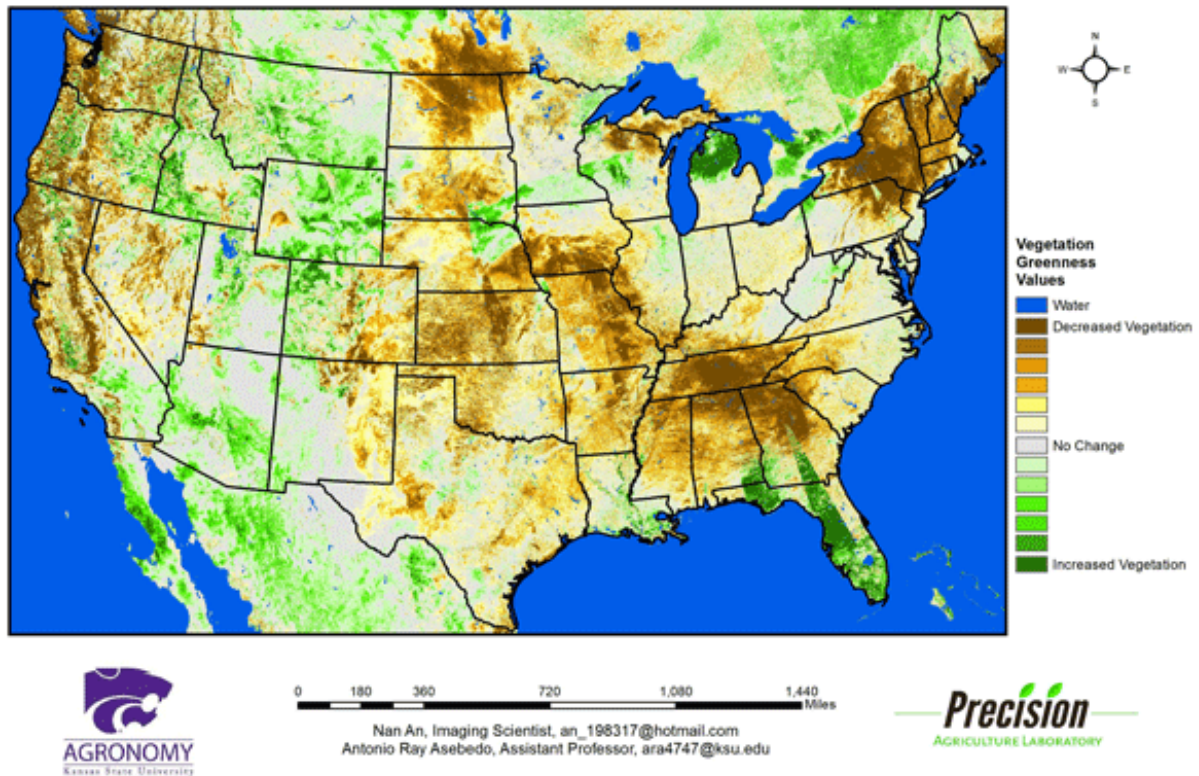


Figure 5. The U.S. comparison to last year at this time for March 21 – March 27, 2017 from K-State’s Precision Agriculture Laboratory again shows the impact that the split in the snow cover has caused this year. Much lower NDVI values prevail from the Pacific Northwest through the Northern Plains and into New England, where snow coverage continues to be much higher this year. The very low NDVI values in the Central Plains and Southeast are due to persistent cloud cover.

Continental U.S. Vegetation Condition Comparison
Late-March 2017 Compared to 28-year Average for Late-March

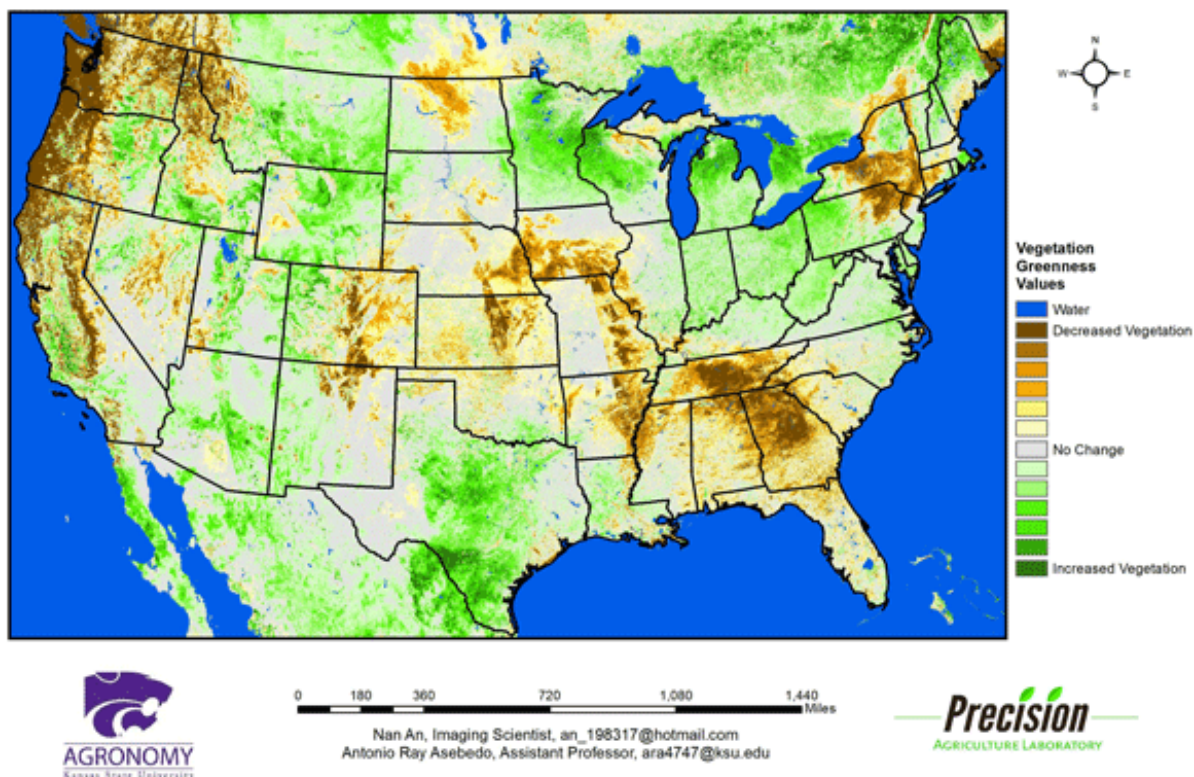


Figure 6. The U.S. comparison to the 27-year average for the period of March 21 – March 27, 2017 from K-State’s Precision Agriculture Laboratory shows an area of below-average photosynthetic activity in the Pacific Northwest, where continuing storm systems have masked vegetative activity. Above-average NDVI values are visible in the Midwest from Iowa through Pennsylvania and northward. This is particularly true in central Minnesota and Wisconsin. Warmer-than-normal temperatures and little snow cover has favored early vegetative growth with continued risk of freeze damage.

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