



K-STATE
Research and Extension

Extension Agronomy

eUpdate

04/14/2017

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

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1. Wheat stripe rust on the move in Kansas

Stripe rust continues to be a top scouting priority for many wheat farmers in Kansas. The disease was reported for the first time this season about 7 to 10 days ago in parts of southeast and south central Kansas. Additional scouting efforts this week indicate that the disease is now established at low levels in many fields in the central region of the state (Figure 1). The disease was also reported on upper leaves of wheat in the southeast corner of the state. Currently, stripe rust is generally reported to be in the lower or middle canopy of wheat in central Kansas.

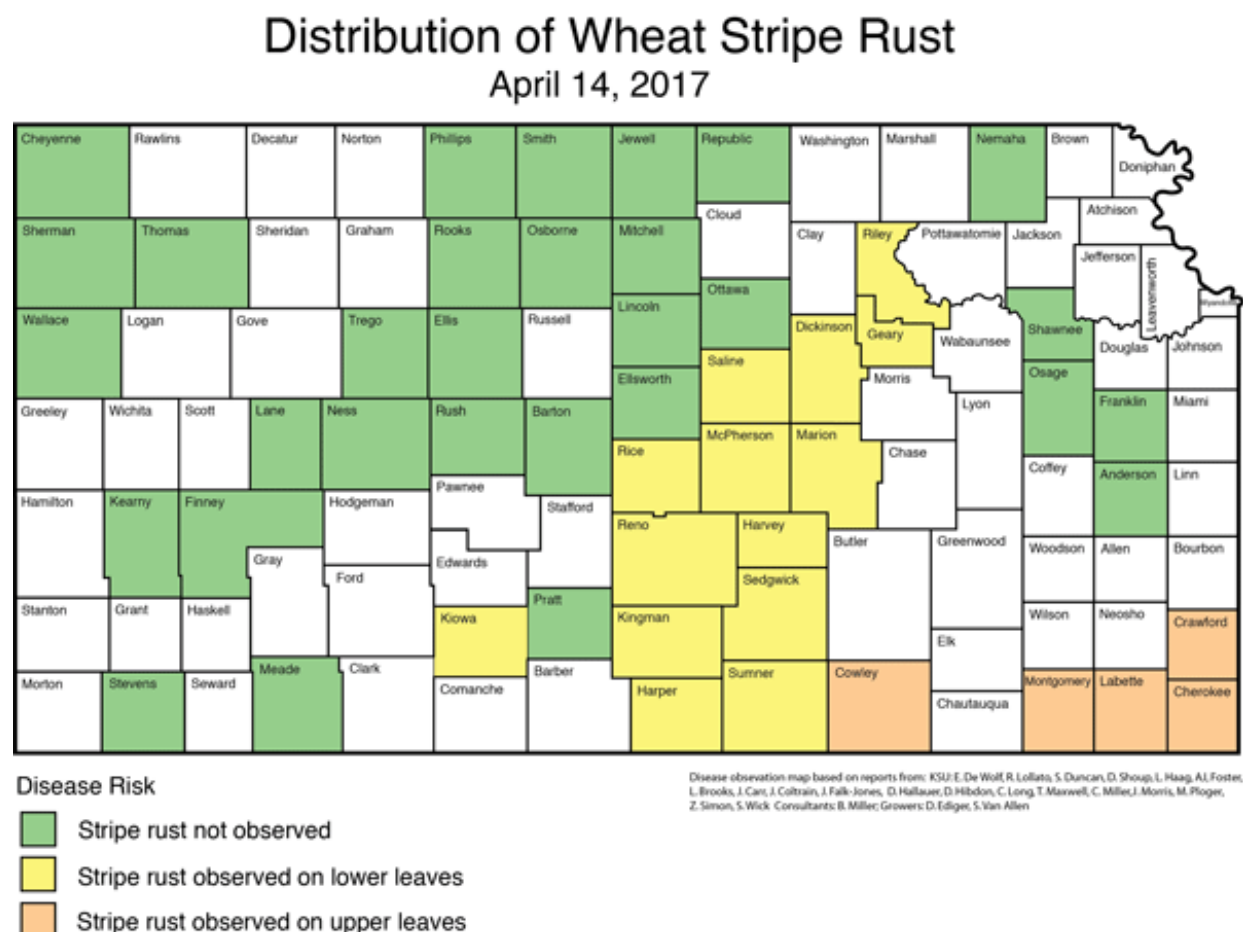


Figure 1. Current distribution of stripe rust in Kansas.

The stripe rust infections we are seeing now likely became established about two or three weeks ago, during a period of weather that was highly conducive to the disease. Stripe rust is favored by temperatures between 45-55 F and extended periods of high relative humidity. Many of the areas we are seeing stripe rust in now had more than 70 hours of favorable temperature and humidity between March 23 and April 6 (Figure 2). Some areas had more than 100 hours of favorable conditions.

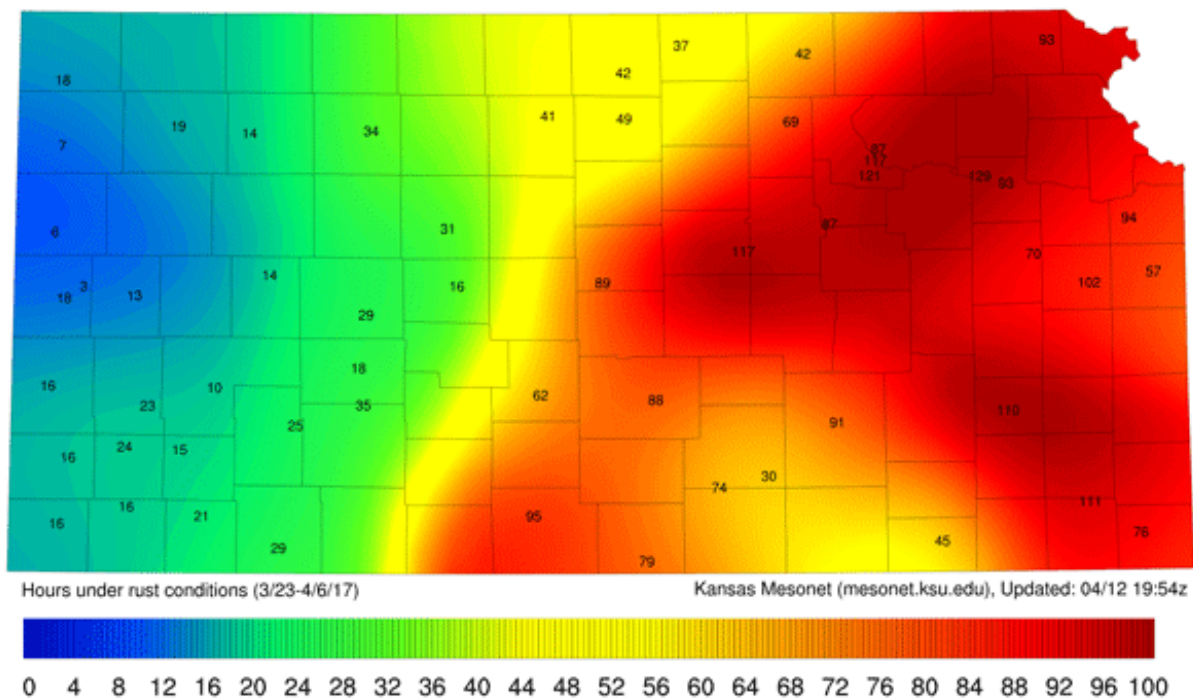


Figure 2. Duration of time (hours) that weather conditions favored the development of stripe rust in Kansas between March 23 and April 6. This favorable period of weather likely helped the disease become established in many parts of central and eastern Kansas.

Interestingly, the weather in recent weeks was less conducive for the disease. The development of stripe rust can be suppressed by warm temperatures, and disease tends to slow when temperature is consistently above 75F. Night time temperatures are particularly important because this is when new stripe rust infections take place. We often see the development of stripe rust begin to slow when night time temperatures are above 60 F and temperatures during the day exceed 80 F for multiple days. Most areas of the state have reported more than 10 hours of temperature above 75F between March 31 and April 14 with parts for southeast and southwest Kansas reporting between 20-31 hours of suppressive temperature for the same time period. Unfortunately, this probably was not enough to suppress the development of stripe rust for long.

The 10-day weather forecast for many areas of the state indicates that temperature and moisture conditions are likely to favor continued development of stripe rust. There is a moderate to high risk of central and southeast Kansas having a severe problem with stripe rust this year. Growers in central Kansas should be actively scouting fields for stripe rust, and making plans to apply a fungicide if the disease is established in their fields.

Fields with good yield potential and seed production fields would be a top priority for a fungicide application because of the generally higher value of grain than general production fields. Varieties such as Armour, Everest, LCS Pistol, LCS Wizard, Garrison, Ruby Lee, and WB-Redhawk are known to be highly susceptible to stripe rust and should also be a top priority. Other highly susceptible varieties include Byrd, Denali, TAM 111, and TAM 112 -- each of which is grown primarily in western Kansas.

For more information about stripe rust identification and fungicide options consider the following publications.

Rust Identification:

<http://www.bookstore.ksre.ksu.edu/pubs/MF2919.pdf>

Fungicide product efficacy:

<http://www.bookstore.ksre.ksu.edu/pubs/EP130.pdf>

Making fungicide decisions:

<http://www.bookstore.ksre.ksu.edu/pubs/MF3057.pdf>

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2. Wheat leaf rust and tan spot getting a foothold in Kansas

The week of April 8-14 has brought more reports of leaf rust in the region. Texas and Oklahoma continue to report moderate to severe leaf rust in their wheat crop with reports as far north as Stillwater, Oklahoma. In Kansas, leaf rust was spotted for the first time about a week ago when Zach Simon, Sedgwick County Research and Extension agent, reported the disease in Sedgwick County. Leaf rust has since been reported in additional counties in south central Kansas (Figure 1). These reports of leaf rust are important because the disease is most damaging when it becomes established in a field prior to the heading and flowering stages for growth.

Some popular varieties in central Kansas -- including 1863, T158, and WB 4458 -- are susceptible to leaf rust. Important varieties in western Kansas that could also be vulnerable include TAM 111, TAM 112, Denali, and Byrd. Growers with these varieties should be scouting for leaf rust regularly as their crop moves into the heading stages of growth.

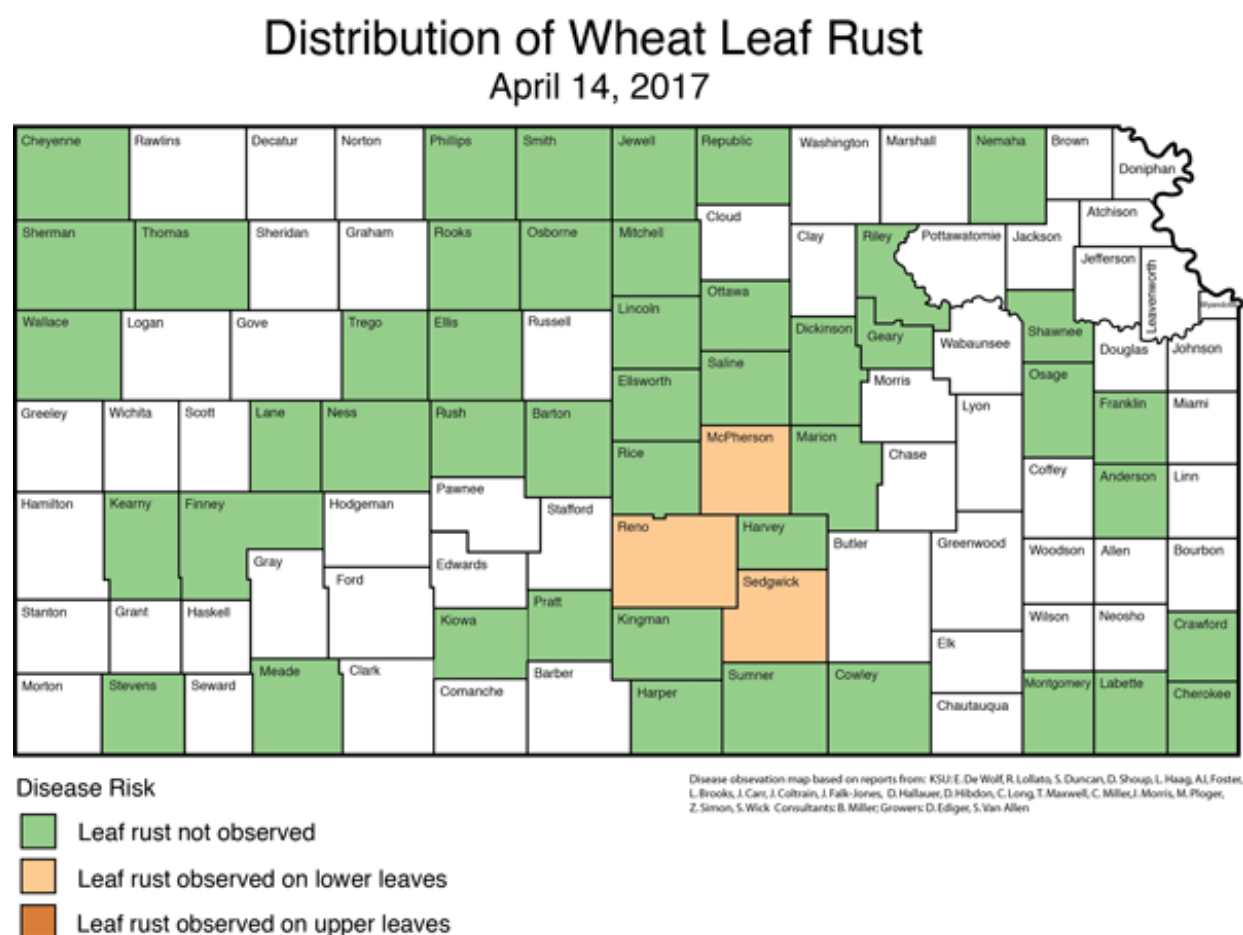


Figure 1. Current distribution of leaf rust in Kansas.

Tan spot (Figure 2) and powdery mildew (Figure 3) are also getting a foothold in some fields in central Kansas. The fungus that causes tan spot survives in wheat residues left over from previous

years. Tan spot is often most severe in fields with large amounts of wheat residues on the soil surface. The fungus reproduces on these residues and is spread by wind or splashing rain to the newly established wheat crop. Powdery mildew is showing up in the lower and middle canopy of some varieties. Powdery mildew can become a problem if cool humid weather continues to favor spread of the disease.

The presence of leaf rust, tan spot, and powdery mildew in wheat fields is cause for concern. Fields with tan spot and/or powdery mildew in the lower canopy, and with even traces of leaf rust or stripe rust becoming established on the upper leaves, would likely benefit from a fungicide application.



Figure 2. Wheat with symptoms of tan spot. Photo by Erick DeWolf, K-State Research and Extension.



Figure 3. Wheat with symptoms of powdery mildew. Photo by Erick DeWolf, K-State Research and Extension.

For more information on tan spot see:

<http://www.bookstore.ksre.ksu.edu/pubs/EP134.pdf>

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3. Wheat growing conditions update: April 14, 2017

The wheat crop continues to develop at a fast pace across the state. Our estimates of crop development for different portions of the state are provided in Figure 1. The most advanced fields in far southeast corner of the state are between boot and flowering, and the majority of the region is already at or past flag leaf emergence. Parts of south central Kansas and the northern-most counties in southeast Kansas are mostly now at flag leaf emergence or at boot. Wheat in central Kansas and in fields that emerged last fall in southwest Kansas are past the second node and approaching flag leaf emergence. Northern Kansas and northwest Kansas have the majority of the fields now at jointing growth, or just past it.

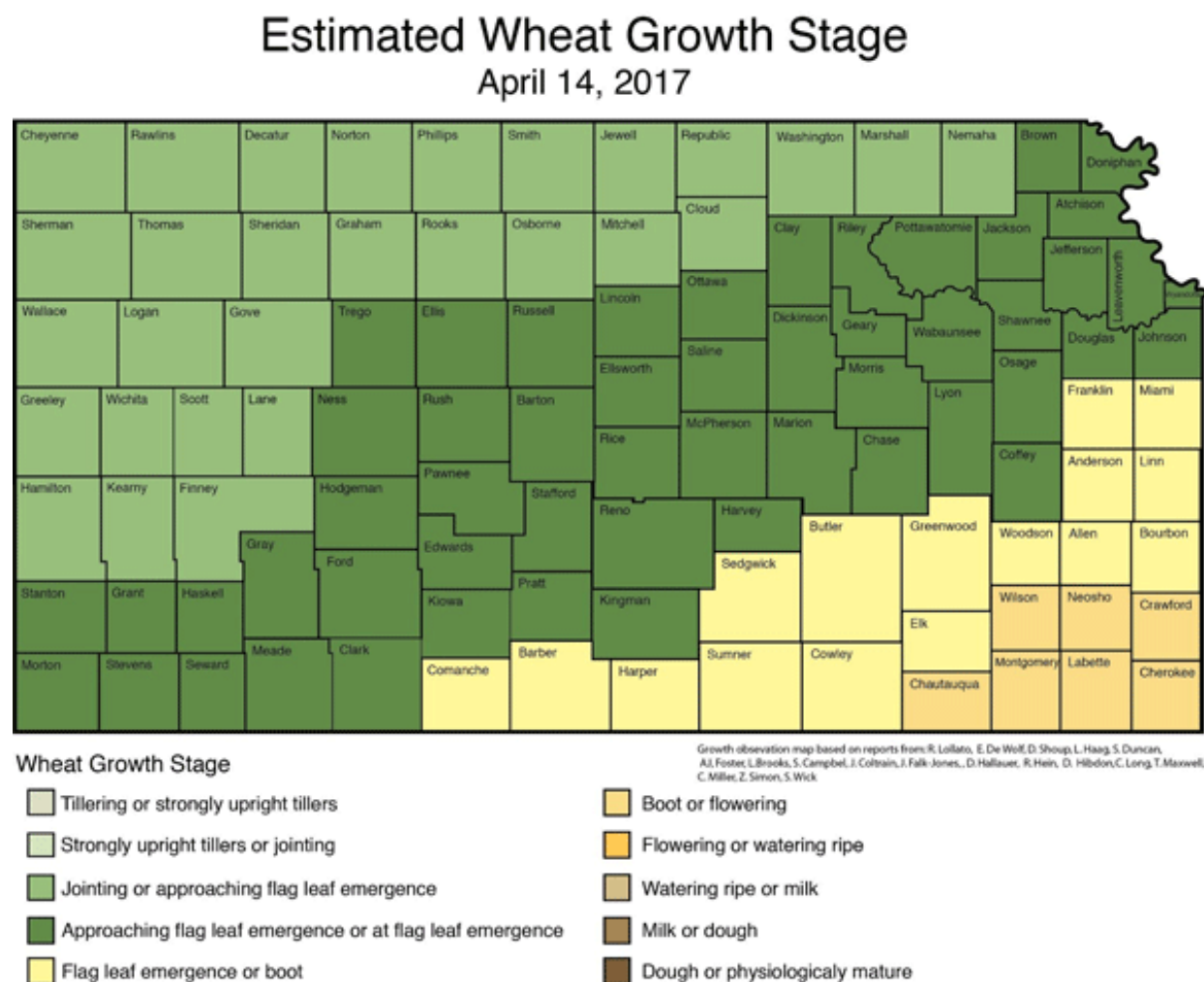


Figure 1. Estimated wheat growth stage as of April 14, 2017. Growth stage is estimated for each county based on temperatures accumulated in the season and adjusted by observations of crop stage by K-State personnel. Local growth stage may vary with planting date and variety.

Wheat conditions update

The major issues being faced across Kansas in the current wheat crop involve viral diseases (mostly wheat streak mosaic in western Kansas and barley yellow dwarf in central Kansas), stripe rust (please see accompanying eUpdate in this April 14, 2017 issue of the Agronomy eUpdate), and nitrogen and sulfur deficiencies which are still showing up in many Kansas wheat fields.

Viral diseases

Viral diseases were most likely favored by the warm conditions experienced in the fall, winter, and early spring, and by volunteer wheat not controlled before the growing season. Temperatures above 70°F were observed in February and March, which would favor both the aphids that transmit barley yellow dwarf virus, and the wheat curl mite that transmits wheat streak mosaic virus. Warm temperatures might also shut down the genetic resistance to wheat streak mosaic virus of some varieties, such as Oakley CL. We are getting reports of entire fields being severely damaged by wheat streak mosaic in western Kansas.

Early reports of wheat streak mosaic centered around west central and southwest Kansas; however, we are now getting reports of above-normal levels of disease in northwest Kansas as well. The yield loss led by an early infection of these diseases can be significant in fields where the disease is widespread. There are also reports of this viral disease occurring on scattered plants in many fields in the western portions of Kansas. This patchy distribution in the field is likely the result of low levels of wheat curl mites blowing in from distant areas of higher mite populations. The mites began to feed and transmitted the virus but then died out locally. These scattered infections should be a minor issue in terms of crop yield if the disease remains isolated to the plants (often <1% of the plants showing symptoms) currently showing symptoms, because the remaining plants will compensate for the damaged plants.

Nitrogen or sulfur deficiencies

Fields showing symptoms of nitrogen or sulfur deficiencies are also occurring in the 2017 Kansas wheat crop, both in central and south central Kansas, and into the northwest portion of the state. Nitrogen deficiency is characterized by a pale green color in the lower leaves, while sulfur deficiency results in light green upper leaves.

Producers who have not yet applied their fertilizer are now debating whether to do so, due to the above-average moisture forecast and the good chances of getting the fertilizer in the root zone. The question now is whether there is a yield gain from late-applied nitrogen. K-State research has shown yield gains at times from nitrogen applied as late as Feekes 8-9. However, the yield gain from late-applied nitrogen is not as large as from early applications. Here is the reason:

Grain yield is a function of number of grains per head, numbers of head per area, and individual grain weight. The number of grains per head is determined early in the spring, in between spring greenup and Feekes 5. Thus, the number of grains per head (which is among the most important yield components for wheat) will not be affected by late-applied N. The main effect of late-season N on wheat yield will come from reducing tiller abortion due to nitrogen deficiency or, in other words, maintenance of the number of heads per area.

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Thus, producers wanting to make the decision of applying N now need to first define what growth stage their wheat is. Greater yield gains will occur from applications at earlier stages of development. Very limited grain yield increase can be expected from fields that are past Feekes 8-9. For fields still at Feekes 6-8, the nitrogen might help maintain the tillers already present.

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4. Corn planting in Kansas: Soil moisture and precipitation outlook

There has been a variable, but generally substantial, amount of precipitation in many parts of the state during the past month (Fig. 1). In some areas of the eastern part of the state total precipitation was more than 7 inches, with lesser amounts toward the west and north central parts of the state. Normal precipitation amounts in Kansas for the period from March 15 to April 14 range from 1.15 to 3.82 inches. The amount received in southwest and eastern Kansas during this period has been well above normal (Fig. 2).

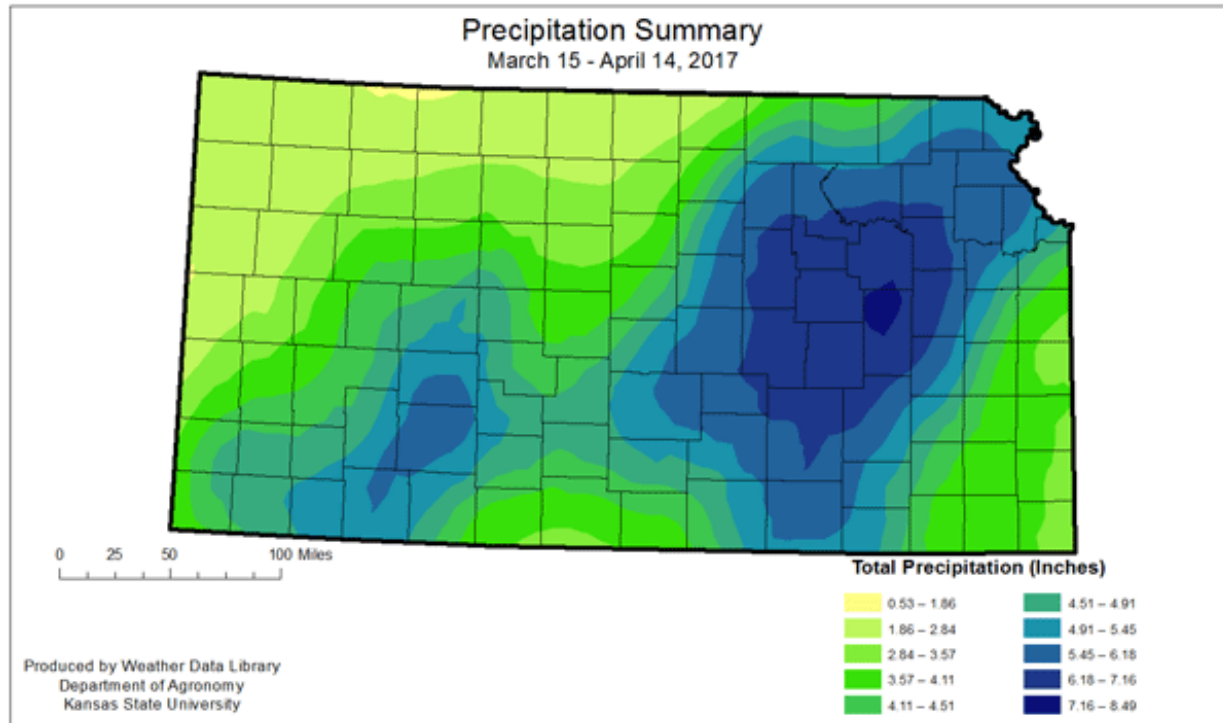


Figure 1. Precipitation summary for the period from March 15 to April 14, 2017.

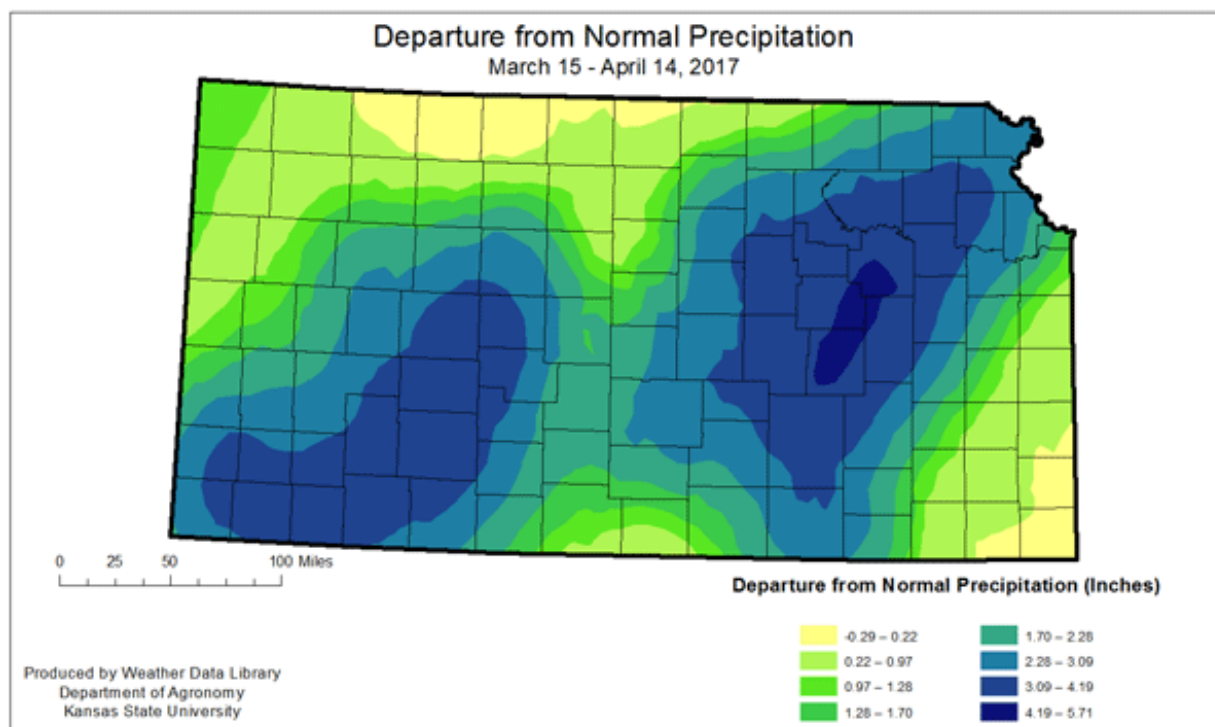


Figure 2. Departure from normal precipitation for the period from March 15 to April 14, 2017.

The medium-term outlook (8-14 day, April 13 to 21-27) is calling for above normal probabilities for precipitation for the entire state, as well as most of the northcentral part of the Corn Belt region (Fig. 3).

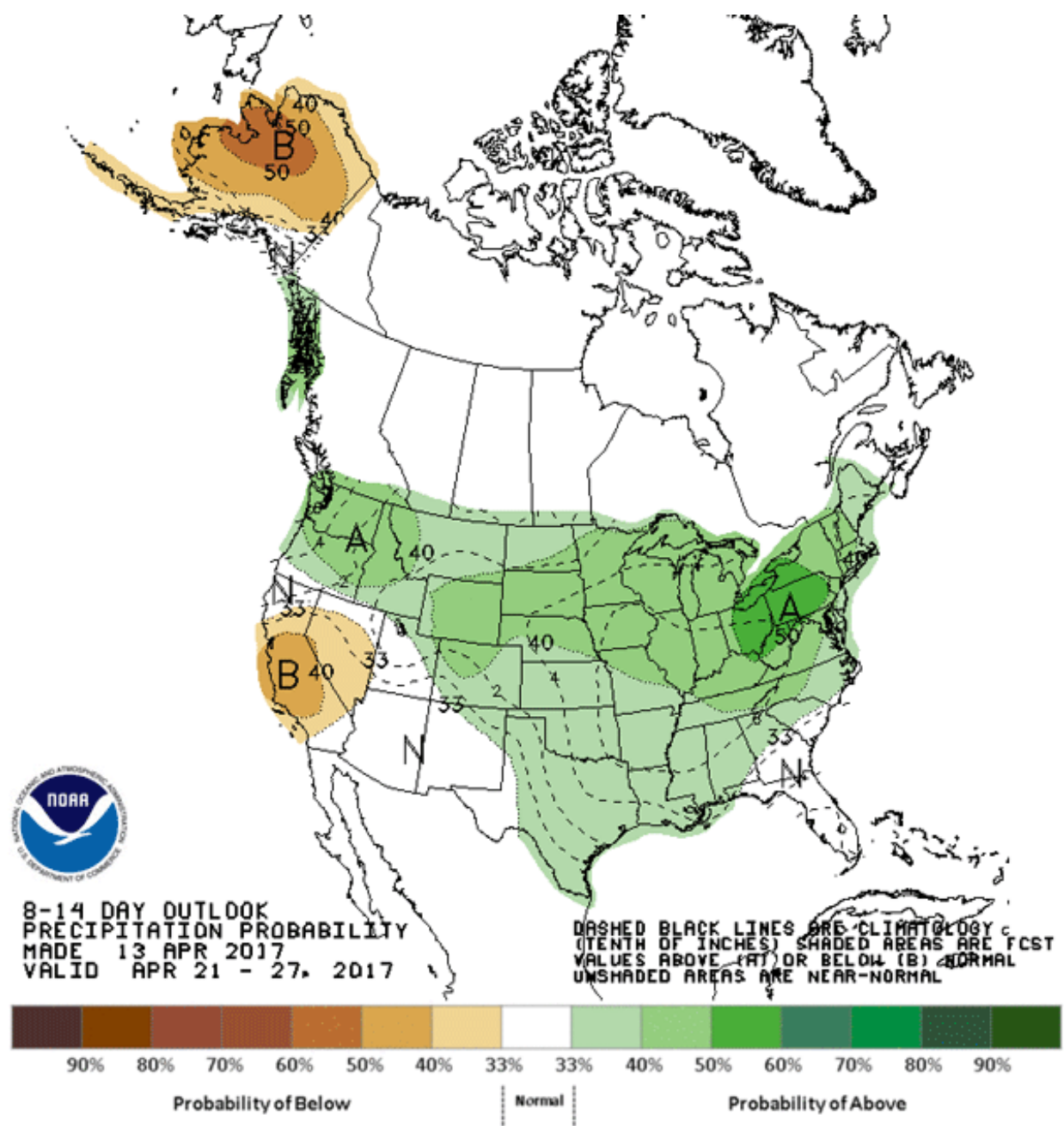


Figure 3. 8-14 Day Outlook Precipitation Probability from NOAA.

In the nearer term, April 14-21 (Fig. 4), the outlook for precipitation calls for almost 0.5 inches in the southwest region to more than 3 inches of rain in the eastern part of the state, adding to the precipitation already received this past month. This would definitely slow down the soil drying process and impede any field work until conditions are more suitable for planting.

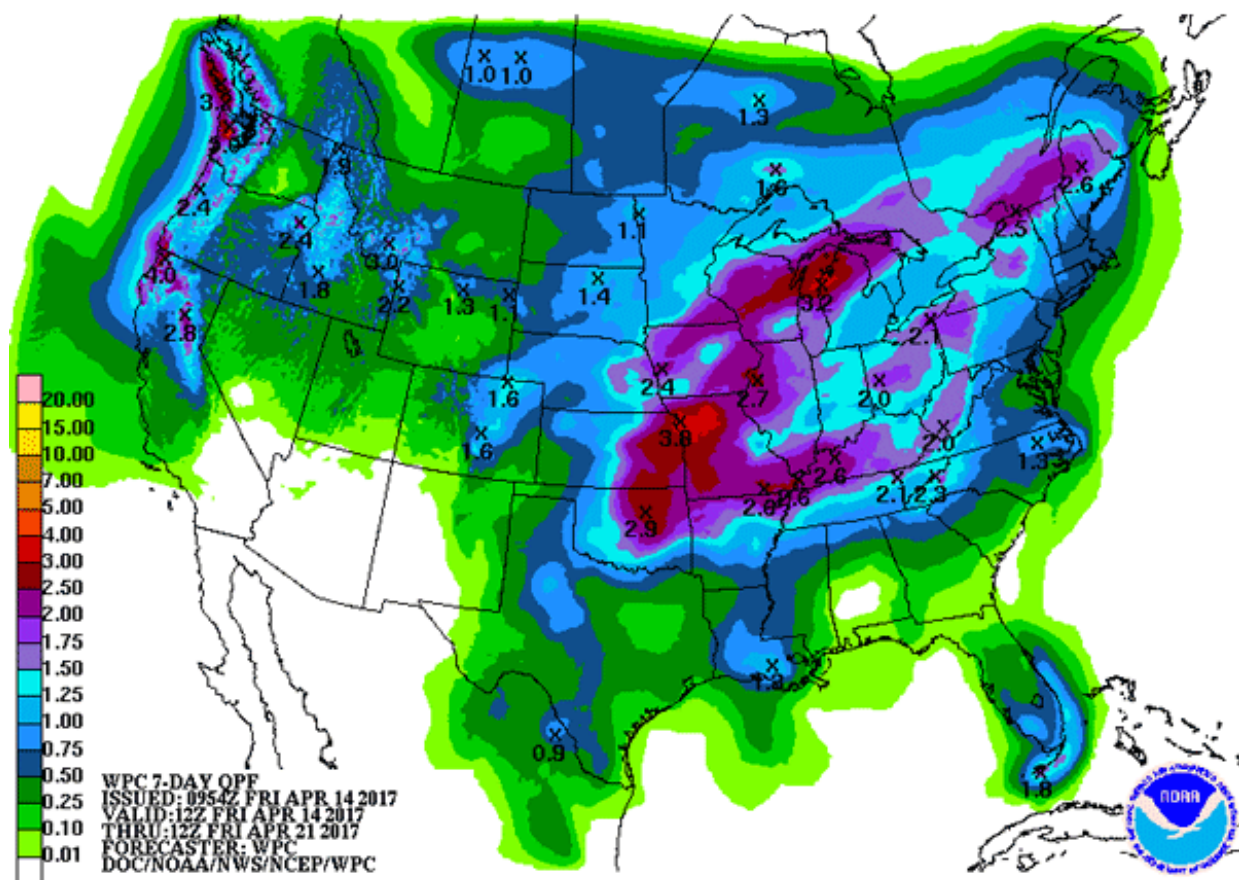


Figure 4. 7-Day Outlook Precipitation Probability for April 14-21, NOAA.

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

It looks possible or even likely that wet conditions will affect early planting of corn in many areas of the state for a while yet. If possible, wait and plant under more uniform soil temperature and moisture conditions to guarantee a more uniform early-season stand of plants.

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

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5. Soybean planting dates and maturity group: Trends and K-State recommendations

Trends in Kansas

Planting date is one of the primary management practices under the farmer's control that can highly influence soybean yields, in addition to genetic yield potential and the environment. In recent decades, Kansas producers have been planting soybeans slightly earlier -- at the rate of about one-third day per year (Fig. 1). The past two growing seasons, however, the "50% planting date" mark was achieved at a similar time (first week of June) statewide.

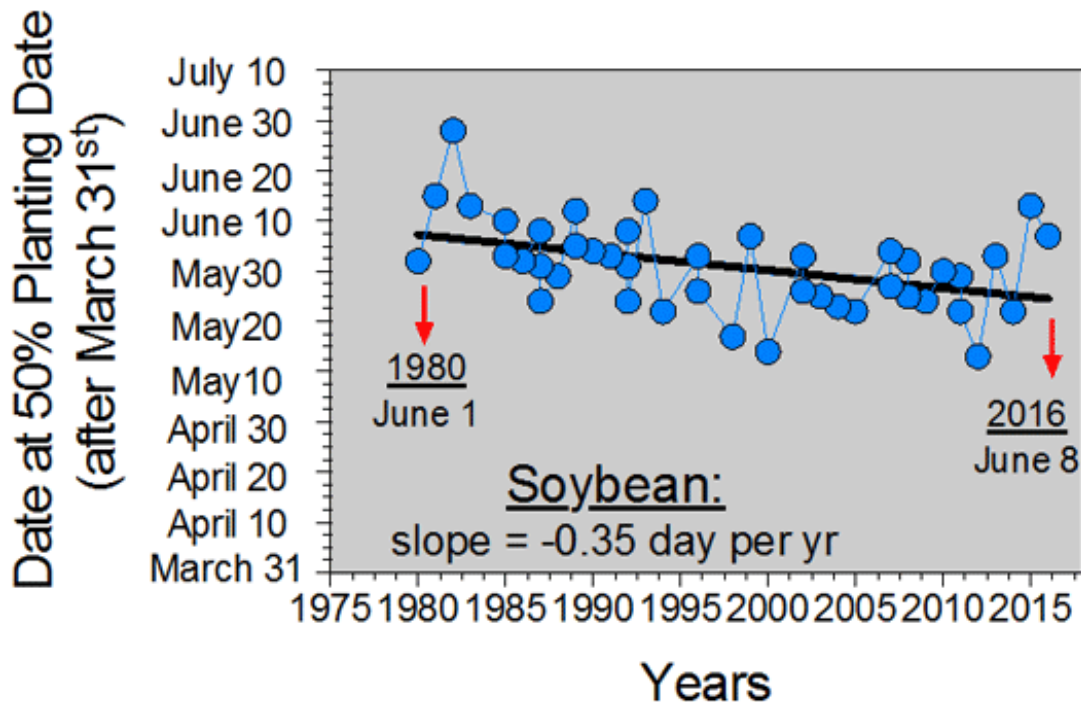
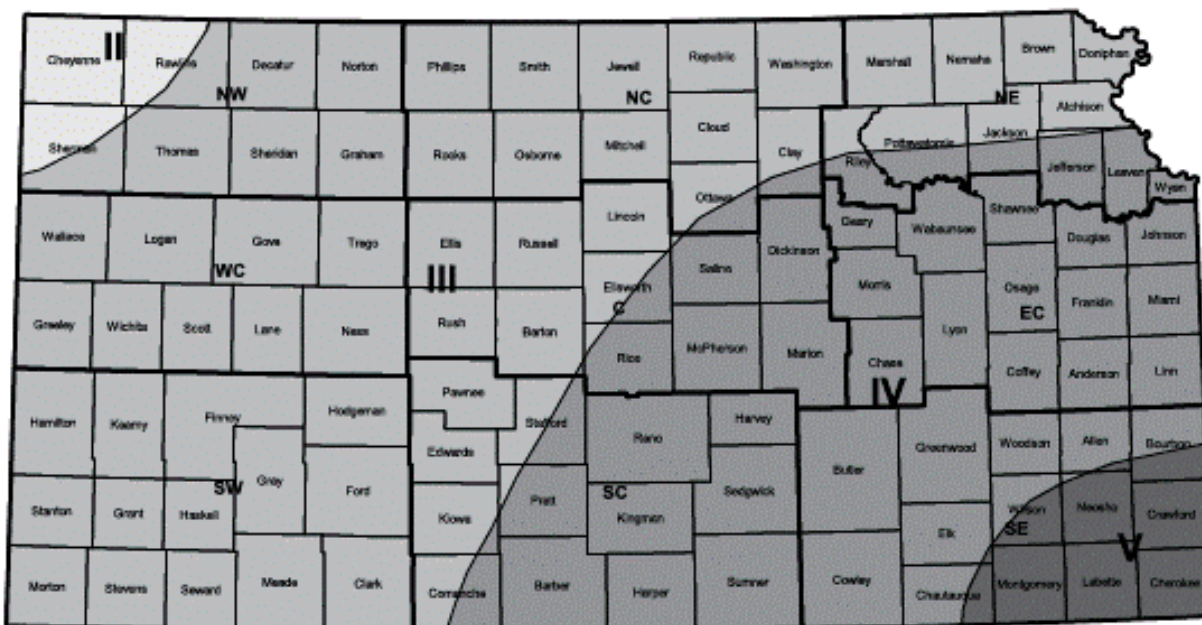
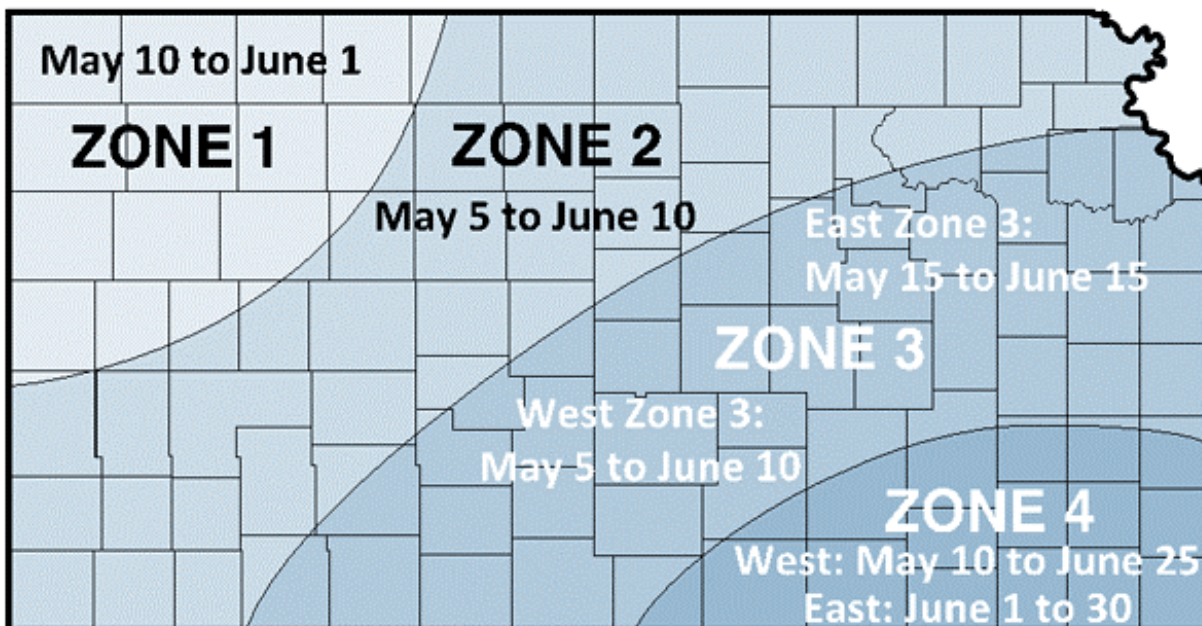


Figure 1. Trend in the date at which 50% of planting progress was achieved for soybean from 1980 to 2016 in Kansas. Source: USDA-NASS.

Kansas planting dates and maturity groups

Soybean can be planted over a wide range of planting dates (Fig. 2, upper panel) with adequate soil moisture conditions, although germination and emergence could be reduced and/or delayed in cool soils (less than 60 degrees F). The recommended maturity groups vary by the area across the state (Fig 2, lower panel).



Figures 2. Recommended soybean planting dates (upper panel) and suggested maturity groups (bottom panel) across Kansas.

K-State research: Planting date by maturity group

A summary of four studies on soybean planting date by maturity group performed during the 2014 season is available at: Ciampitti, I. A.; Shoup, D. E.; Sassenrath, G.; Kimball, J.; and Adey, E. A. (2015), *Soybean Planting Date x Maturity Group: Eastern Kansas Summary*, Kansas Agricultural Experiment Station Research Reports:1:2. <http://newprairiepress.org/kaesrr/vol1/iss2/21/>

During the 2015 growing season, a similar study was conducted in 5 sites across Kansas. And during the 2016 growing season, a similar study was conducted in 3 sites across Kansas. The optimum combination of soybean planting date x maturity group was governed by the environment (site) evaluated.

In this research, three soybean varieties (early, medium, and late maturity groups) were planted at three planting dates during the 2014, 2015, and 2016 seasons. A full description of all planting dates and maturity groups evaluated is summarized in Table 1.

Table 1. Location, year, planting date, soybean maturity group and water condition.

Location	Year	Planting Date	Maturity Group	Water
Manhattan	2014	April 22, May 15, and June 3	2.0, 3.8, and 4.8	Dryland
Topeka	2014	May 2, May 20, and June 18	2.0, 3.8, and 4.8	Irrigated
Ottawa	2014	May 5, May 28, and June 26	3.7, 4.2, and 4.8	Dryland
Parsons	2014	May 2, June 3, and June 26	3.9, 4.8, and 5.6	Dryland
Hutchinson	2014	June 3 and July 2	3.7, 4.5, and 5.6	Dryland
Manhattan	2015	April 14, May 12, and June 5	3.0, 3.7, and 4.5	Dryland
Rossville	2015	April 30, May 13, and June 9	3.0, 3.7, and 4.5	Irrigated
Ottawa	2015	May 4, June 10, and June 29	3.7, 4.2, and 4.8	Dryland
Parson	2015	May 5, June 2, and July 1	3.9, 4.8, and 5.6	Dryland
Hutchinson	2015	April 29, June 10, and July 6	3.7, 4.5, and 5.2	Dryland
Manhattan	2016	April 14, May 5, and June 2	3.0, 3.7, and 4.5	Dryland
Ottawa	2016	June 3, June 23, and July 15	3.8, 4.2, and 4.9	Dryland
Topeka	2016	May 5, May 23, and June 8	3.0, 3.9, and 4.5	Irrigated

2014 Results

The 2014 yield results of these tests are presented in Figure 3.

Under rainfed conditions at Manhattan, the mid-maturity group (3.8) was the highest-yielding at both early and late planting date. The late maturity group (4.8) outyielded the other maturity groups at the mid planting date (May 15).

Under irrigation at Topeka, group 3.8 and 4.8 (medium and late) varieties maximized yields at the

earliest planting date (May 2), with yields above 70 bu/acre. Lower yields were observed for the mid-May planting date, with the exception of the late-maturing group (4.8). For the late planting time (June 18), group 3.8 (yields >60 bu/a) significantly outyielded groups 2.0 and 4.8 (yields <45 bu/a).

Under rainfed conditions at Ottawa, yields were similar, but generally greater for May 28 (mid-planting date) as compared with May 5 (early) across all maturity groups (about 35 bu/acre). At the late planting date (June 26), yields increased with the later maturity groups. At Parsons (rainfed), group 3.9 (early) outyielded the other maturity groups for the May 2 planting date. Conversely, later-maturing soybean groups yielded better at the other planting dates (June 3 and 26). Although a trend in the data supported timing of planting to capture fall rains to enhance yield, the results were not statistically significant between the later maturity groups. At Hutchinson (rainfed), early planting (June 3) produced a significant yield benefit as compared with the late planting time (July 2).

At Ottawa, cumulative precipitation decreased as the planting date was delayed in 2014 (Figure 4). Overall, the later planting date received close to 10 inches less precipitation over the growing season than the early and mid-planting times. Despite that, yields were slightly higher at the later planting dates. For this site, the timing of the rain on the latest planting date was more critical than the quantity. Soybean planted at the early- and mid-planting date received close to 50% of the total rainfall in the first months of the growing season. The importance of adequate moisture for soybean yield development is most apparent from the lower yields for the late planting date at Hutchinson. This location received the lowest cumulative precipitation compared to the early planting date and compared to other locations.

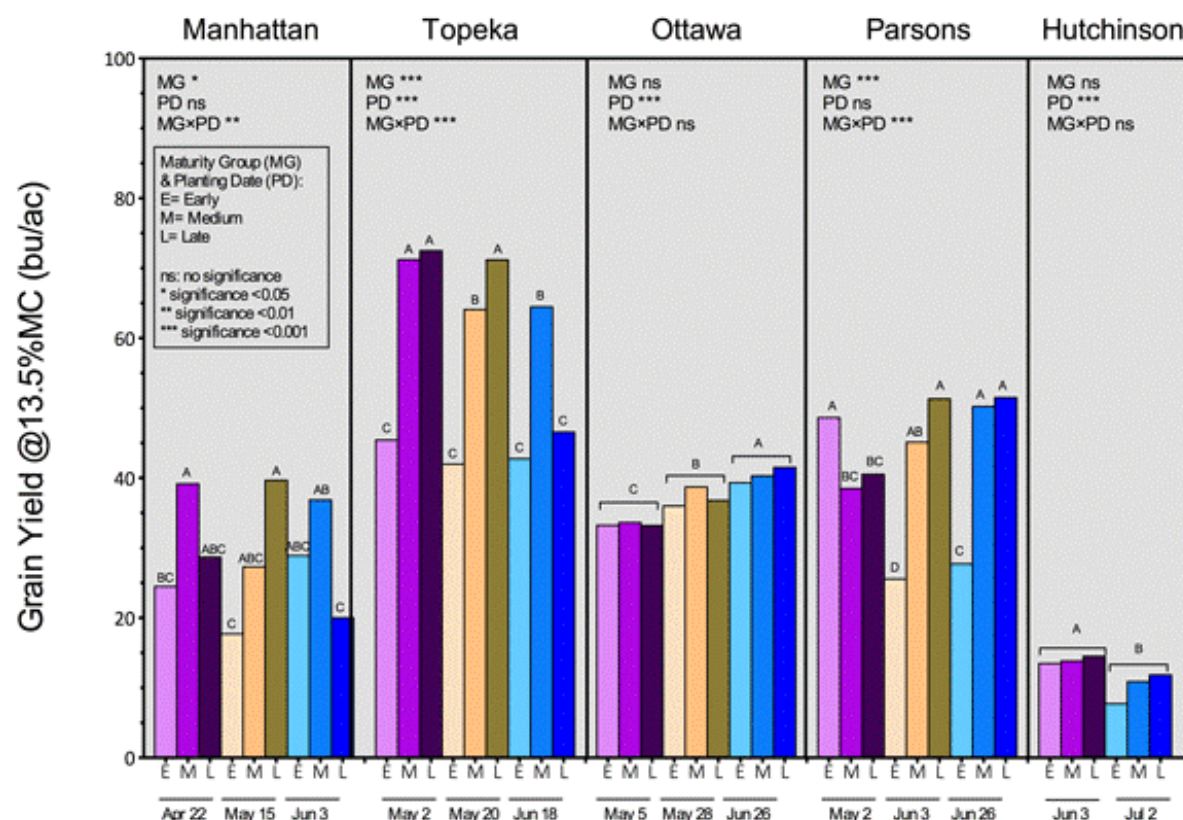


Figure 3. Soybean yields with different planting dates (early, mid, and late) and maturity groups (E = early, M = medium, L = late maturing groups) at five locations across Kansas for the

2014 growing season. Information related to maturity groups (MG) is presented in Table 1.

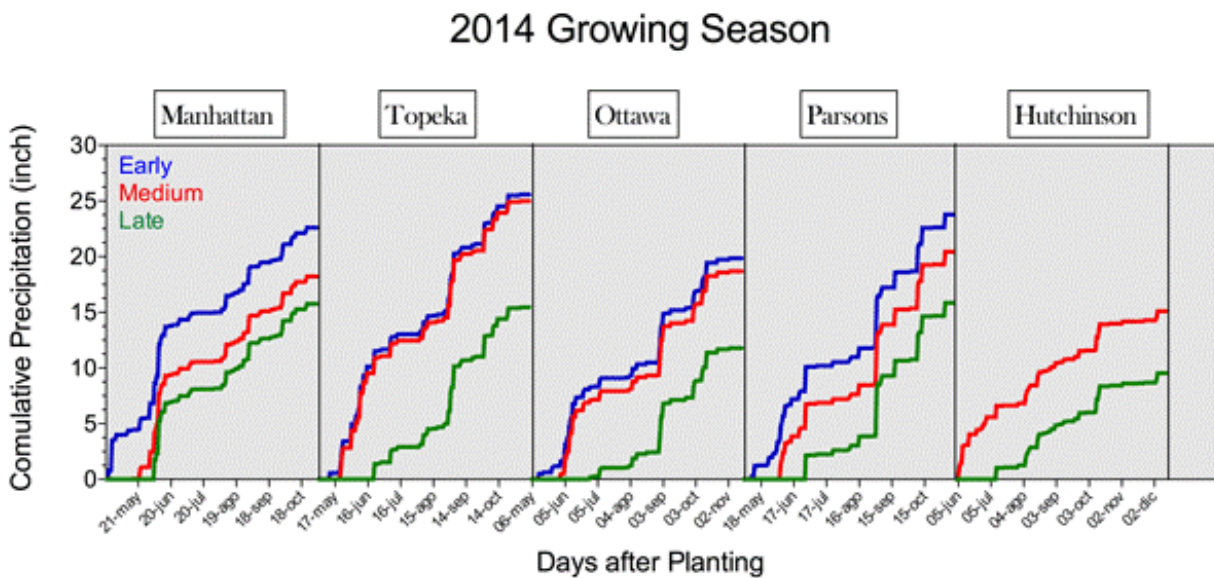


Figure 4. Cumulative precipitation (inches, without including the irrigation at Topeka site) for different planting dates (early, mid, and late) at five locations across Kansas for the 2014 growing season. Information related to specific planting dates per site is presented in Table 1.

2015 Results

The 2015 yield results of these tests are presented in Figure 5.

For the 2015 season at Manhattan, both mid- (3.7) and late-maturity group (4.5) resulted in the highest yield across all planting dates, and outyielded the early-maturity (3.0). Under irrigation at Rossville, the early planting date produced the highest soybean yield (>70 bu/a) in both the mid- (3.7) and late-maturity groups (4.5). At later planting dates, the mid-maturity group (3.7) outyielded both the early and late-maturity groups. Potential soybean yields were reduced when planting date was delayed. Under rainfed conditions at Ottawa, yields were similar for early (May 4) and mid-planting dates (June 10). Yield was reduced when planting on June 29 (late planting date), with a maximum of close to 40 bu/acre. At all planting dates, maturity groups did not present a significant yield difference at Ottawa.

For Parsons, yields in 2015 were strikingly different from those observed in 2014. The lowest yield reported at this site was 53 bu/acre for the earlier maturity group (3.9) for the early planting date. This was greater than any yield reported for any maturity group or planting date in 2014. A trend was documented with the mid-maturity group (4.8) having the highest yield of all cultivars at 75 bu/acre for the earliest planting date. No differences in yield were observed between maturity groups planted at the later dates. While there was a trend for lower yields at the later planting date (58 bu/acre at July 1 vs. 64 bu/acre at June 2 across all cultivars), the difference was not significant.

For Hutchinson, soybean planted at the late April and early June planting dates outyielded the late planting time (July 6) by more than 10 bu/acre. When considering maturity group, the early- and mid-maturity groups (3.7 and 4.5) showed a yield increase for the early June planting date, but a significant decrease for the early July planting time.

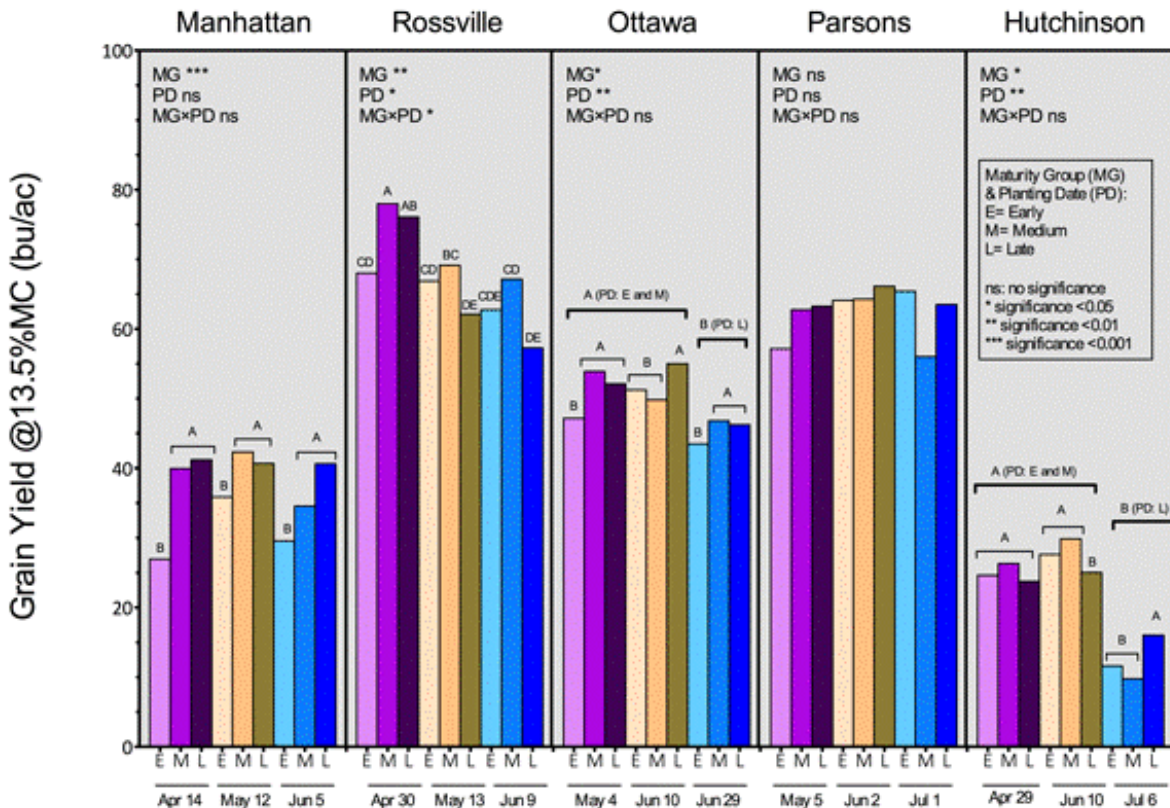


Figure 5. Soybean yields with different planting dates (early, mid, and late) and maturity groups (E = early, M = medium, L = late maturing groups) at five locations across the state of Kansas for 2015 growing season. Information related to maturity groups (MG) is presented in Table 1.

2015 Season

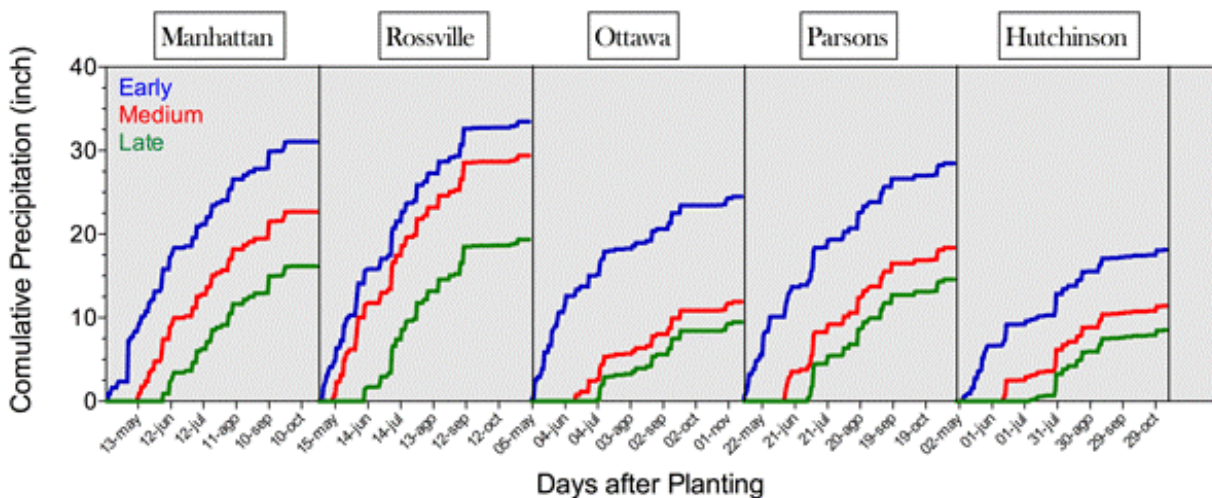


Figure 6. Cumulative precipitation (inches, without including the irrigation at Rossville site) for different planting dates (early, mid, and late) at five locations across the state of Kansas for the 2015 growing season. Information related to specific planting dates per site is presented in Table 1.

At Rossville, the main difference for the latest planting date compared to the early- and mid-planting times was the lower amount of cumulative precipitation received (Fig. 6). At Ottawa, cumulative precipitation decreased from early to mid- and late planting dates. For this site, lower yields were documented for the latest planting date, and this was correlated lower precipitation and timing of the precipitation. Shorter season cultivars suffered from low precipitation during grain-filling. A similar analysis could be extended to the yield pattern measured at Hutchinson during the 2015 growing season. Soybean at the latest planting date received less cumulative precipitation in a shorter growing season, penalizing the crop with an approximately 10 bu/acre yield reduction as compared with early- and mid-planting date.

2016 Results

The 2016 yield results of these tests are presented in Figure 7.

Planting date significantly influenced yields at Manhattan and Ottawa sites. For Manhattan site, the early planting date (April 14) had a 12-bushel yield advantage compared to the late planting date (June 2), (Fig. 7). At the Ottawa site, yields were also higher at the earlier planting dates: early-planted (63 bu/acre) > medium (57 bu/acre) > late-planted (45 bu/acre). For Manhattan and Ottawa, MG did not significantly influence yields. At the Topeka site (irrigated), yields for the early and medium planting dates, averaged 67 bu/acre. The late-planted beans yielded only 61 bu/acre. At the Topeka site, the early and medium MGs outyielded the late variety by 9 bushels (63 compared to 54 bu/acre).

Cumulative precipitation at the Manhattan site favored early season growth for beans at the early planting date, with small differences for the medium- and late-planted scenarios (Fig. 8). At the Topeka and Ottawa sites, cumulative precipitation was similar across all planting dates, with a larger

separation between the medium- and late-planting dates for Topeka relative to Ottawa site.

In summary for the 2016 season, the main factor influencing yield at Manhattan and Ottawa was planting date – with higher yields at the earlier planting dates. Later planting dates reduced the overall length of the growing season, which diminished maximum yield potential, in addition to other factors that could have limited yields (i.e. insects, disease, etc.). At the Topeka irrigated site, yields were lower with the shortest MG, with a 15% overall yield reduction (across all planting dates).

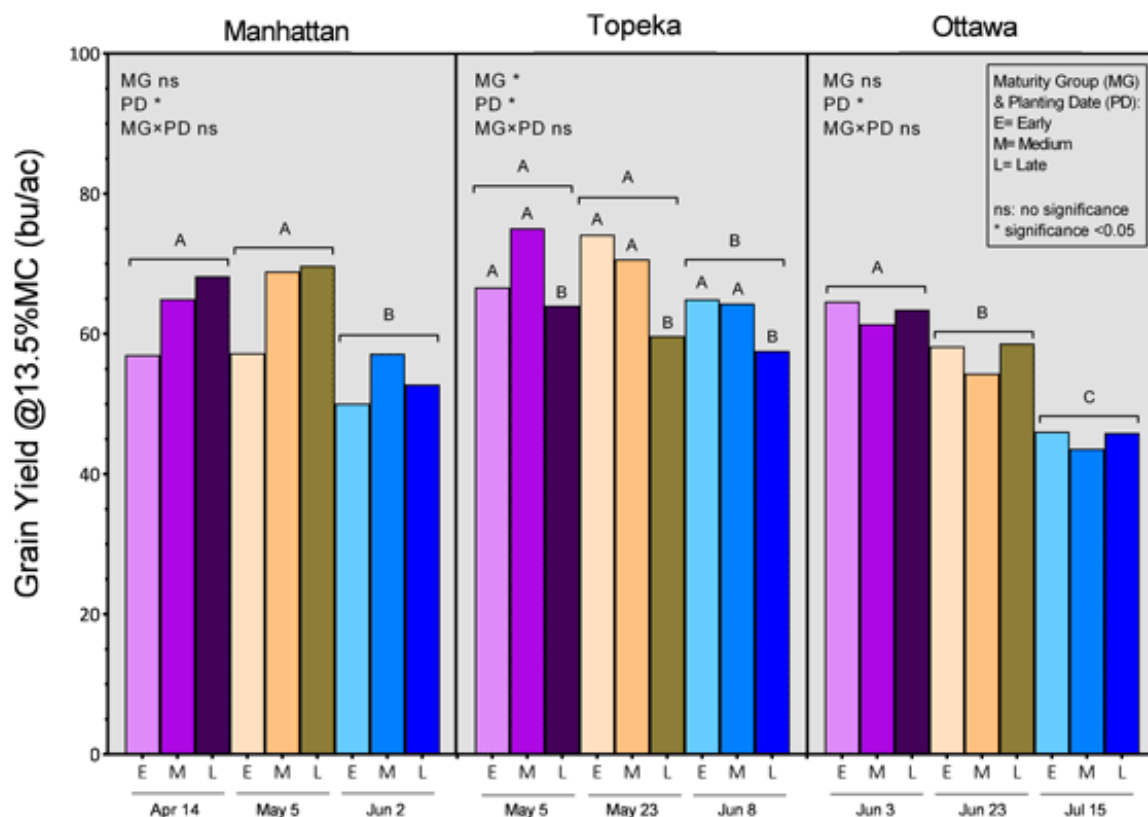


Figure 7. Soybean yields with different planting dates (early, mid, and late) and maturity groups (E = early, M = medium, L = late maturing groups) at three locations across the state of Kansas for 2016 growing season.

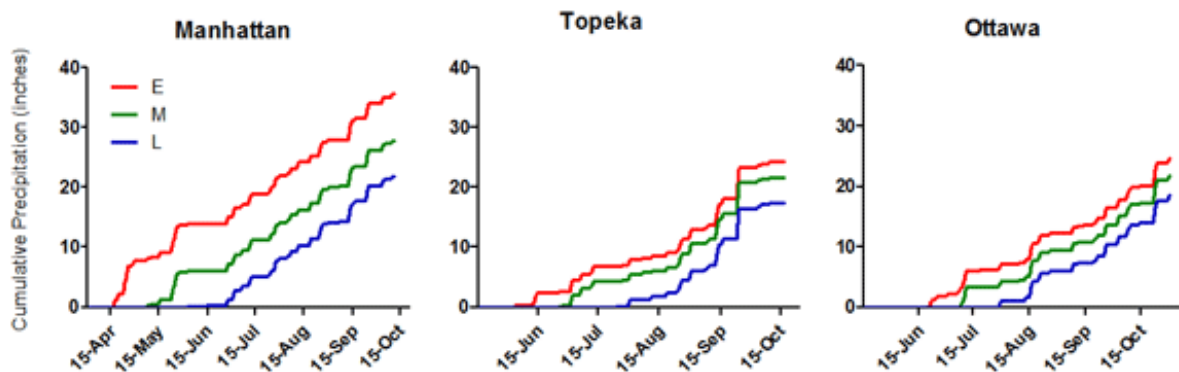


Figure 8. Cumulative precipitation (inches) for all soybean studies with different planting dates (early, mid, and late) at three locations across Kansas during the 2016 growing season. Information related to planting dates per site is presented in Table 1.

Conclusions and recommendations

- Ultimately, weather patterns dictate soybean yields, especially under dryland conditions. There is no guarantee that any certain planting date will always work out the best when it comes to soybean yields in Kansas. In fact, the distribution and amount of rainfall and the day/night temperature variations around flowering and during the grain filling periods have large impacts in defining soybean yield potential. Thus, when the risk of drought stress during the growing season is high, diversifying planting dates may be a good approach to consider.
- When planting early, seed should be treated with a fungicide and insecticide. Selecting varieties with resistance to soybean cyst nematode and sudden death syndrome is advisable. Do not plant into soils that are too wet, however. Also, do not plant until soil temperatures are close to 60 degrees F. If planted into soils cooler than that, seedlings may eventually emerge but will have poor vigor.
- In drier areas of Kansas and on shallow soils, yields have been most consistent when planting soybeans in late May to early June. By planting in that timeframe, soybeans will bloom and fill seed in August and early September, when nights are cooler and the worst of heat and drought stress is usually over.
- In our 2014, 2015, and 2016 planting date by maturity group studies, interactions with the environment were the primary factor in the yields and maturity group responses. Under full irrigation, the earliest planting date maximized yields for cultivars from the late 3, mid- and late 4 maturity groups at Topeka and Rossville sites. For our rainfed sites (2014, 2015, and 2016), no single rule can apply to all conditions, but late planting (late June) showed good yields at Ottawa and Parsons for later-maturing groups in 2014, with a different pattern for the 2015 and 2016 seasons (for example, Ottawa had the highest yields at early and mid-planting dates those years).

- Cumulative amount and timing of precipitation primarily influenced soybean planted later in the growing season.
- New studies are planned for the 2017 growing season for similar locations.

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6. 2017 In-Depth Wheat Diagnostic School in Hutchinson, May 10-11



K-State Research and Extension will hold its 2017 Wheat In-Depth Diagnostic School on May 10 and 11 at the South Central Kansas Experiment Field, 10620 S. Dean Road, Hutchinson. On May 10, the hours are 9 a.m. to 6 p.m. On May 11, the hours are 8 a.m. to 1 p.m.

Topics will include:

- Wheat Growth and Development
- Managing Wheat for Forage and Grain
- Wheat Fertility
- Disease Management
- Weed Identification
- Weed Management
- Entomology
- Wheat Breeding and new Technologies
- Precision Agriculture
- Summer Cover Crops After Wheat

Speakers (K-State Research and Extension unless otherwise noted):

- Romulo Lollato
- Stu Duncan
- David Marburger, Oklahoma State University
- Erick DeWolf
- Dorivar Ruiz Diaz
- Kevin Donnelly

- Dallas Peterson
- Allan Fritz
- Ray Asebedo
- DeAnn Presley
- Jeff Whitworth
- Holly Schwarting

This school is tailored to be a hands-on learning opportunity for agronomy professionals, farmers, and anyone interested in wheat production. It has approval for Certified Crop Advisor and Commercial Pesticide Applicator credits. The cost is \$140 for both days for those who RSVP by May 2. After that date and for walk-ins, the cost is \$180 for both days. The registration fee includes access to all speakers and an extensive take-home field book. Breakfast and lunch both days is also included in the fee.

To register for the school, register online at <http://www.global.ksu.edu/wheat-diagnostic>

For more information, contact registration@ksu.edu or call 785-532-5569.

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7. Comparative Vegetation Condition Report: April 4 - 10

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 15: 04/04/2017 - 04/10/2017

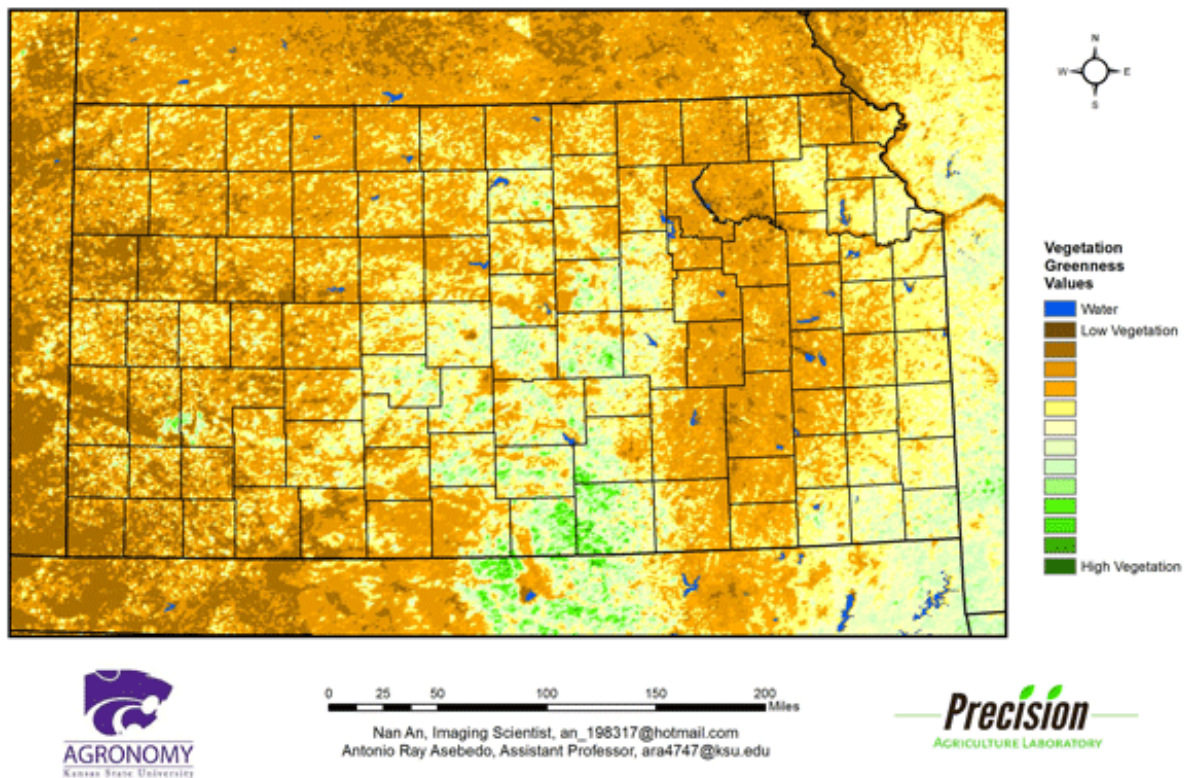


Figure 1. The Vegetation Condition Report for Kansas for April 4 – April 10, 2017 from K-State’s Precision Agriculture Laboratory shows increasing vegetative activity along the Arkansas River in southwest into south central Kansas Only light activity is visible along the Flint Hills.

Kansas Vegetation Condition Comparison

Early-April 2017 compared to the Early-April 2016

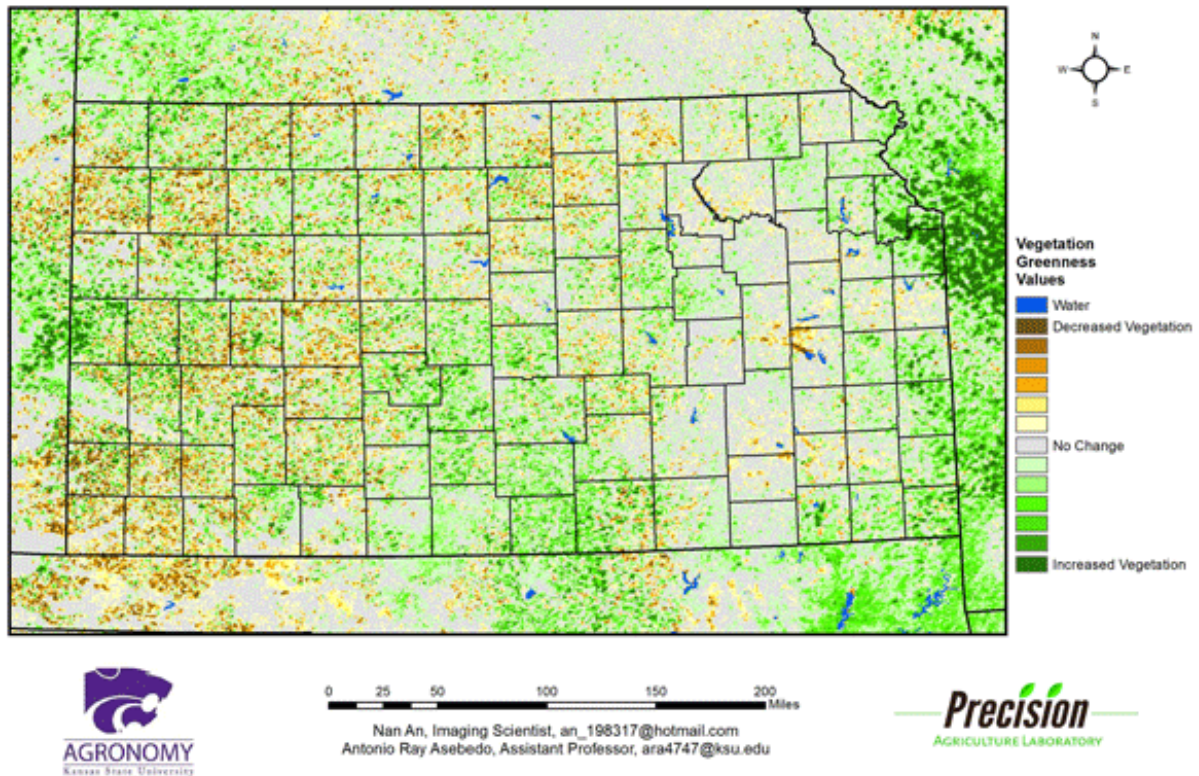


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for April 4 – April 10, 2017 from K-State’s Precision Agriculture Laboratory shows similar NDVI values across most of Kansas. The winter wheat is less advanced this year than last, particularly in western Kansas, where dry fall conditions hampered establishment. The greatest increase in vegetative activity is in extreme northeast Kansas.

Kansas Vegetation Condition Comparison

Early-April 2017 compared to the 28-Year Average for Early-April

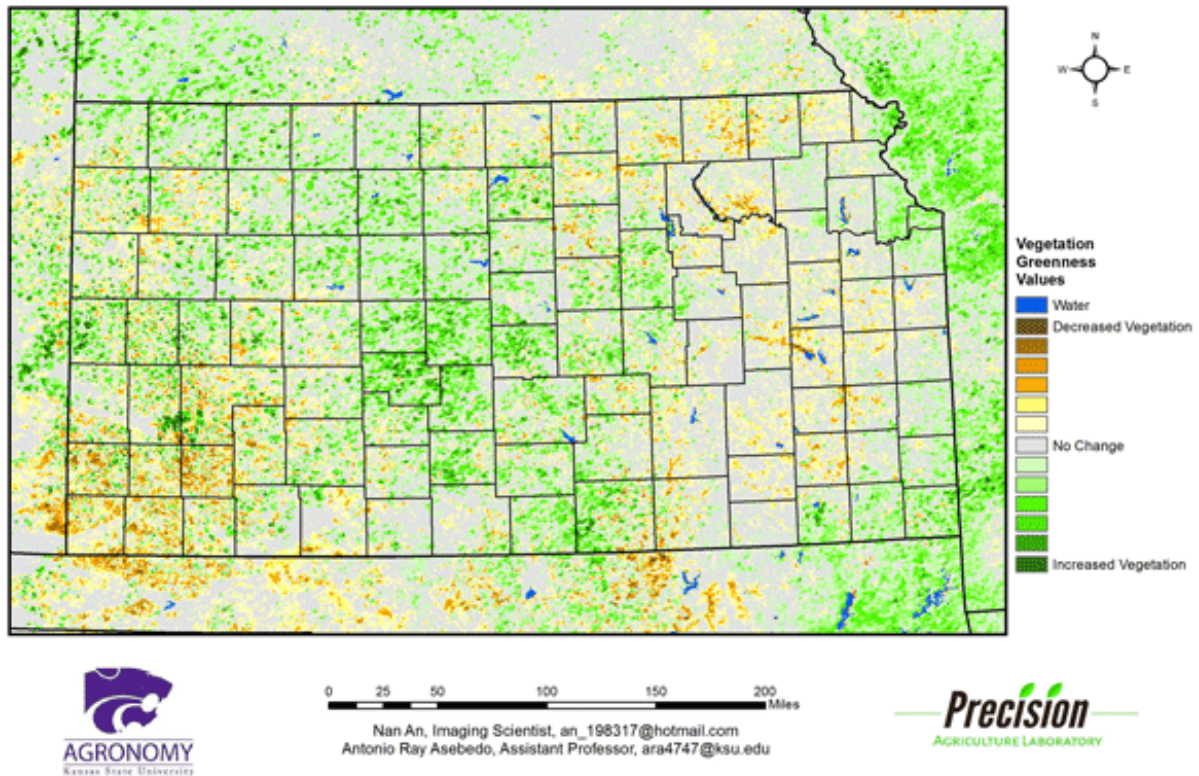


Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for April 4 – April 10, 2017, from K-State's Precision Agriculture Laboratory much of the state has near- average photosynthetic activity. Above-average NDVI values are visible in the central and south central parts of the state, where precipitation has been more favorable. The lingering impact from the dry conditions last fall is most visible in southwest Kansas.

Continental U.S. Vegetation Condition

Period 15: 04/04/2017 - 04/10/2017

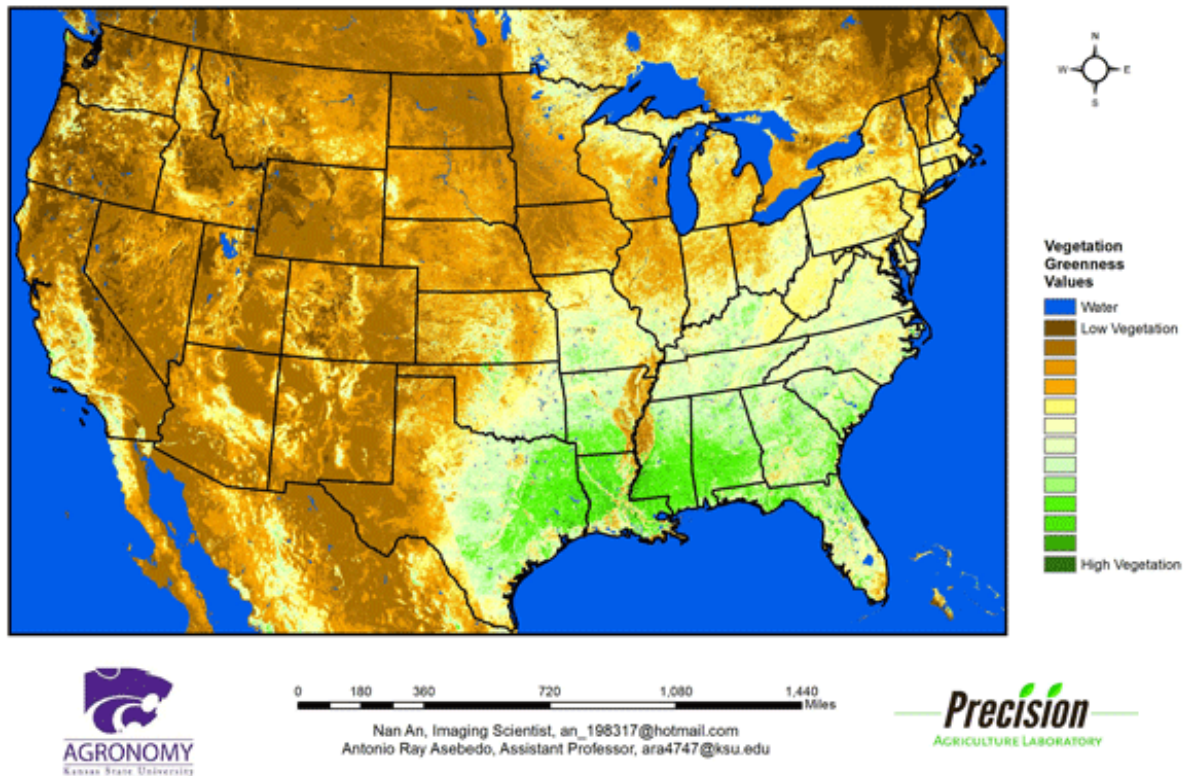


Figure 4. The Vegetation Condition Report for the U.S for April 4 – April 10, 2017 from K-State’s Precision Agriculture Laboratory shows the area of highest NDVI is confined to the South, particularly in east Texas and Louisiana. Low NDVI values are visible along the central Mississippi River Valley. As of April 1st, the snow depiction has been dropped, since the snow season is largely over.

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Continental U.S. Vegetation Condition Comparison Early-April 2017 Compared to Early-April 2016

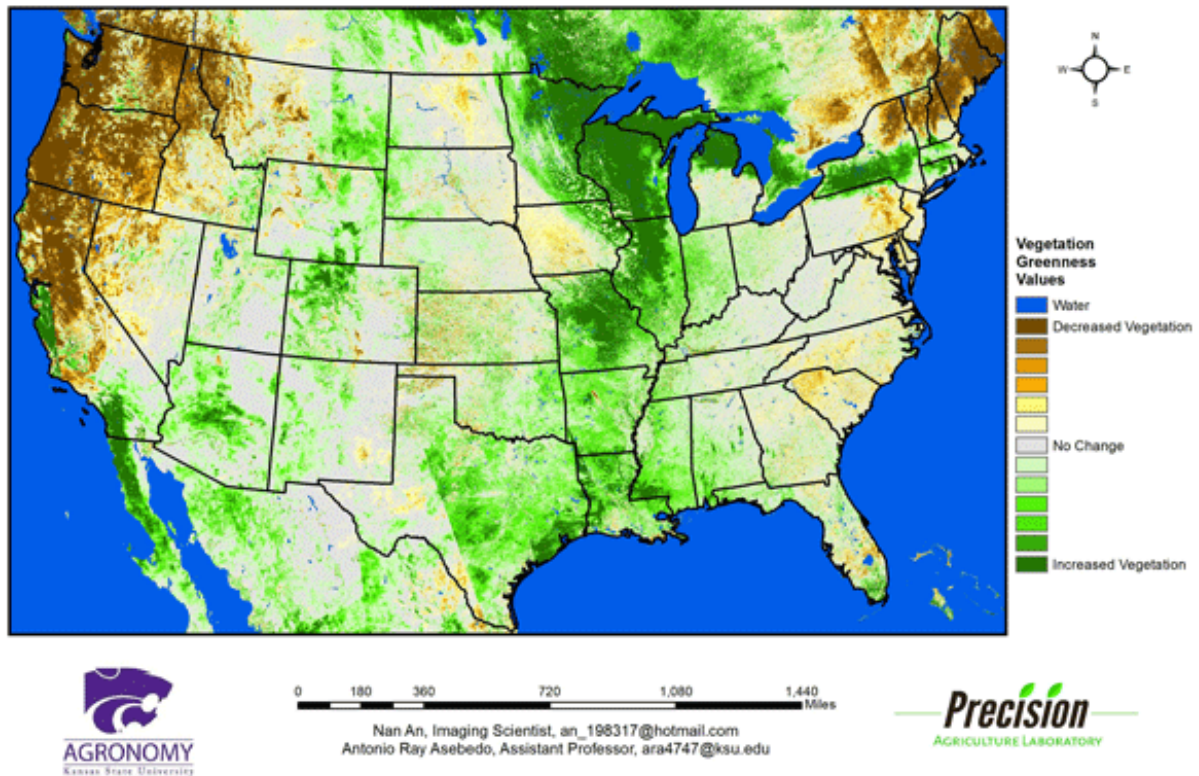


Figure 5. The U.S. comparison to last year at this time for April 4 – April 10, 2017 from K-State’s Precision Agriculture Laboratory again shows the impact that the split in snow cover has caused this year. Much lower NDVI values prevail from the Pacific Northwest through the Northern Plains and into New England, where snow coverage has been much higher this year than last. Meanwhile the upper Midwest has much higher NDVI values, due to warmer-than-normal temperatures and favorable precipitation.

Continental U.S. Vegetation Condition Comparison Early-April 2017 Compared to 28-year Average for Early-April

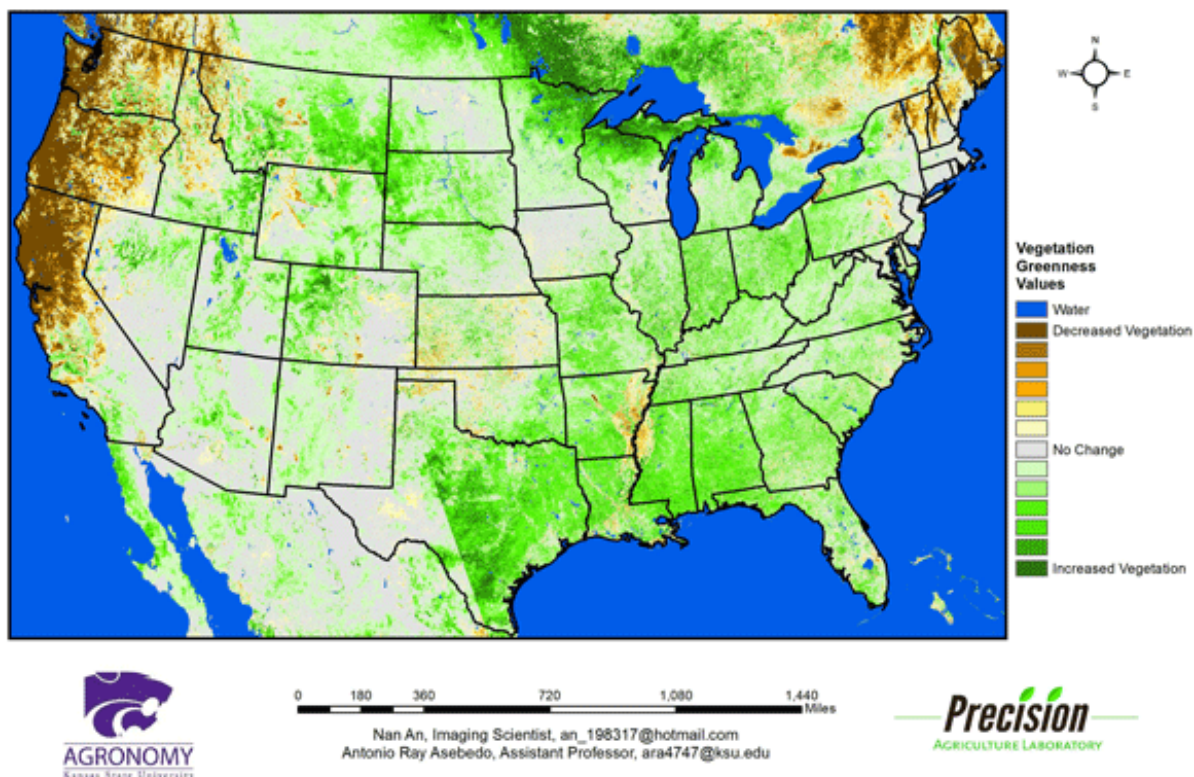


Figure 6. The U.S. comparison to the 27-year average for the period of April 4 – April 10, 2017 from K-State’s Precision Agriculture Laboratory shows below-average photosynthetic activity in the Pacific Northwest, where continuing storm systems have masked vegetative activity. Above-average NDVI values are visible in the Midwest from Iowa through Pennsylvania and northward. This is particularly true in northern Minnesota and Wisconsin. Warmer-than-normal temperatures and favorable precipitation has favored early vegetative growth in that region. This has resulted in continued risk of spring freeze damage.

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