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These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, 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 Kathy Gehl, 785-532-3354 kgehl@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Double crop options after wheat

Double cropping after wheat harvest can be a high-risk venture. The available growing season is relatively short. Heat and/or dry conditions in July and August may cause problems with germination, emergence, seed set, or grain fill. The soil moisture status is not as desirable as in previous years, thus the odds of success this season may be impacted by the low soil moisture and early-season heat conditions.

The most common double crop options are soybean, sorghum, and sunflower. Other possibilities include summer annual forages and specialized crops such as proso millet or other short-season summer crops – even corn. Cover crops are also an option for planting after wheat.

One major consideration before deciding to plant a double crop or cover crop after wheat is the potential for herbicide carryover. Cover crops can be challenging in this regard. There is little or no mention of rotational restrictions for specific cover crops on the labels of most herbicides. If a crop isn't listed on the label, that doesn't mean there are no restrictions. Generally, there are statements on most labels that indicate "no other crops" should be planted for a specified amount of time, or that a bioassay must be conducted prior to planting the crop. Most of the brassica, or mustard type, crops are likely to be very susceptible to residues of the sulfonylurea herbicides.

Management considerations, production costs, and yield expectations for several double crop options are discussed below.

Soybean

Soybeans are probably the most commonly used crop for double cropping, especially in central and eastern Kansas. With glyphosate-resistant varieties, often the only production cost for planting double crop soybeans in recent years has been the seed, an application of glyphosate, and the fuel and equipment costs associated with planting and harvesting. However, with the development of glyphosate-resistant weeds, additional herbicides may be required to achieve acceptable control and minimize the risk of further development of resistant weeds.

The cost for weed control can't really be counted against the soybeans, however, since that cost should occur whether or not a soybean crop is present. In fact, having beans on the field may even reduce herbicide costs compared to leaving the field fallow. Still, it is highly recommended to apply a pre-emergence residual herbicide before soybeans are planted especially if weed resistance to glyphosate has been a problem. Later in the summer, a healthy soybean canopy may suppress weeds enough that a late-summer burndown application may be avoided.

Variety selection for double cropping is important. Soybeans flower in response to a combination of temperature and daylength, so shifting to an earlier-maturing variety when planting late in a double crop situation will result in very short plants with pods that are close to the ground. Planting a variety with the same or perhaps even slightly later maturity rating (compared to soybeans planted at a typical planting date) will allow the plant to develop a larger canopy before flowering. Planting a variety that is too much later in maturity, however, increases the risk that the beans may not mature before frost, especially if long periods of drought slow growth. The goal is to maximize the length of the growing season of the crop, so prompt planting after wheat harvest time is critical. The earlier

you can plant, the higher the yield potential of the crop if moisture is not a limiting factor.

Adding some nitrogen (N) to double crop soybeans may be beneficial if the previous wheat yield was high and depleted soil N. A soil test before wheat harvest for N levels is recommended. Use no more than 30 lbs/acre of N. It would be ideal to knife-in the N. If that's not possible, banding it on the soil surface would be acceptable. Do not apply N in the furrow with soybean seed as severe stand loss can occur.

Recommended seeding rates for double crop soybeans are no different than for soybeans planted at a typical planting date in a given area or cropping system. Still, seeding rate can be slightly increased if soybeans are planting too late, in order to increase canopy development. Narrow row spacing (15-inch or less) has often resulted in a yield advantage compared to 30-inch rows in late plantings. Soybeans planted in narrow rows will canopy over more quickly than in wide rows, which is important when the length of the growing season is shortened. Narrow rows also offer the benefits of increasing early-season light capture, suppressing weed control and reducing erosion. On the other hand, the advantage of planting in wide rows is that the bottom pods will usually be slightly higher off the soil surface to aid harvest. The other consideration is planting equipment. Often no-till planters will handle wheat residue better and place seeds more precisely than drills, although the difference has narrowed in recent years.

What are typical yield expectations for double crop soybeans? It varies considerably depending on moisture and temperature, but yields are usually several bushels less than full-season soybeans. A long-term average of 20 bushels per acre is often mentioned when discussing double crop soybeans in central and northeast Kansas. Rainfall amount and distribution can cause a wide variation in yields from year to year. Double crop soybean yields typically are much better as you move farther southeast in Kansas, often ranging from 20 to 40 bushels per acre.

Sorghum

Sorghum is another double crop option. Unlike soybeans, sorghum hybrids for double cropping should be earlier maturing. Sorghum development is primarily driven by accumulation of heat units and the double crop growing season is too short to allow medium-late or late hybrids to mature before frost in most of Kansas.

Late-planted sorghum will likely not tiller as much as early plantings and can benefit from slightly higher seeding rates than would be used for sorghum planted at an earlier date. Narrow row spacing is advised, especially if the outlook for rainfall is good.

A key component for estimation of N application rates is the yield potential. This will largely determine the N needs. It is also important to consider potential residual N from the wheat crop. This can be particularly important when wheat yields are lower than expected. In that situation, additional available N may be present in the soil.

Double crop sorghum planted into average or greater-than-average amounts of wheat residue can result in a challenging amount of residue to deal with when planting next year's crop. Nitrogen fertilizer can be tied up by wheat residue, so use application methods to minimize tie-up, such as knifing into the soil below the residue.

Weed control can be important in double crop sorghum. Warm-season annual grasses such as

crabgrass can reduce double crop sorghum yields. Using a chloracetamide-and-atrazine preemergence product may be key to successful double crop sorghum production.

No-till sorghum studies at Hesston documented 4-year average double crop sorghum yields of 75 bushels per acre compared to about 90 bushels per acre for full-season sorghum. A different 10-year study that did not have double crop planting but did compare early and late planting dates averaged 73 bushels per acre for May planting vs. 68 bushels per acre for June planting.

Sunflowers

Sunflowers can be a successful double crop option anywhere in the state, provided there is enough moisture at planting time to get a stand. Sunflowers need more moisture than any other crop to germinate and emerge, so the biggest hurdle to sunflower production is getting a successful stand. Once that hurdle is overcome, sunflowers are more drought-tolerant than most crops so the chances of having a yield in any kind of environment are good.

When double cropping sunflowers, producers should use slightly lower seeding rates to reflect the lower yield expectations compared to full-season sunflowers. It is also necessary to use shorter-season hybrids so they bloom and mature before frost.

Weed control can be an issue with double crop sunflowers since herbicide options are limited, especially postemergence. Thus, controlling weeds prior to sunflower planting is critical and may be complicated by the presence of glyphosate-resistant weeds and preplant restrictions with other herbicides. Consequently, double crop sunflowers may be most successful where glyphosate-resistant weeds are not present. Planting Clearfield or Express Sun sunflowers will provide additional postemergence herbicide options, but ALS-resistant kochia and pigweeds still could not be controlled. Beyond, the product used in Clearfield sunflower, does have activity on annual grasses as well as broadleaves (except for ALS-resistant biotypes).

Summer annual forages

With mid-July plantings, and where herbicide carryover issues are not a concern, summer annual sorghum-type forages are also a good double crop option. A test planted July 21 near Holton in 2008, when summer rainfall was very favorable, provided yields of 2.5 to 3 tons dry matter/acre for hybrid pearl millet and sudangrass at the low end to 4 to 5 tons dry matter/acre for forage sorghum, BMR forage sorghum, photoperiod sensitive forage sorghum, and sorghum x sudangrass hybrids. Earlier plantings may be able to produce even more tonnage, as long as there is adequate August rainfall. One challenge with late-planted summer annual forages is getting them to dry down when harvest is delayed until mid- to late-September. Wrapping bales or bagging to make silage are good ways to deal with the higher moisture forage this late in the year.

Corn

Is double crop corn a viable option? Corn is typically not recommended for June or July plantings because yield is usually substantially less than when planted earlier.

Typically, corn planted in mid-July has a difficult time pollinating and seldom receives sufficient heat units to fill grain before frost. This was illustrated in a study at the South Central Experiment Field in 2007 where 100 to 112 RM corn planted in late June yielded only 40 bushels per acre compared to

over 130 bushels per acre for an April planting. In Manhattan in 2007, the same hybrids planted on June 25 yielded over 130 bushels per acre, which is certainly acceptable but substantially less than the 150 bushels per acre for earlier plantings.

In another study at Manhattan a 112-day corn hybrid planted in mid-July produced nearly 100 bushels per acre. No grain production was expected from that planting, but July rains were above normal at this location, allowing for successful pollination in August and grain fill in September. Note however that the corn could not be harvested until January because it took so long to dry down with the cool fall temperatures. Also note that 2007 was somewhat unusual in the amount and distribution of July and September rains at this location.

Very short-season corn hybrids (80 to 95 RM) have the greatest chance of maturing before frost in double crop plantings, but generally have less yield potential than hybrids that are 100 RM or more used for full-season plantings. Short-season hybrids often will set the ear fairly close to the ground, increasing the difficulty of harvest. Glyphosate-resistant hybrids will make weed control easier with double crop corn, but there may still be problems with late-emerging summer weeds such as pigweeds, velvetleaf, and large crabgrass. Keep in mind that corn is very susceptible to carryover of most residual ALS herbicides used in wheat.

Volunteer wheat control

One of the issues with double cropping often overlooked by producers is the potential for volunteer wheat in the crop following wheat. If volunteer wheat emerges and goes uncontrolled, it can cause serious problems for nearby planted wheat fields in the fall.

Volunteer wheat can generally be controlled fairly well with glyphosate in Roundup Ready crops. It can also be controlled in sunflowers and soybeans with the labeled postemergence grass herbicides such as Assure II, Select, or Poast Plus, but control is reduced during times of drought stress. Atrazine can provide control of volunteer wheat in corn and sorghum, but can be erratic depending on rainfall patterns.

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2. Evaluating corn fields for root-lesion nematode

There are many disease organisms that can result in the reduction of corn yields in Kansas. One of the most insidious is the root-lesion nematode because it operates below ground on the roots and often has no specific, identifiable symptoms other than yield loss. It is present at some level in nearly all corn fields in the state. Historically, the largest yield losses, which can exceed 40 percent in individual fields, occur in western Kansas, where a no-till, continuous corn production system is common.

Like most nematode problems, visible symptoms, if any, may be limited to patchy areas of the field where growth is stunted. Sometimes yellowing may also occur (Figure 1). Occasionally, roots may have lesions on them or roots may appear to be pruned (Figure 2).

Figure 1. Yellowing of plants caused by root-lesion and other nematode injury. Yield in the center of these areas was as low as 30 bu/ac. Photo courtesy of Tamra Jackson-Ziems, University of Nebraska-Lincoln.

Figure 2. Badly damaged roots near the end of the season with lesions and root pruning. Photo courtesy of Tamra Jackson-Ziems, University of Nebraska-Lincoln.

The best way to identify a root lesion nematode problem is by a whole-root assay. Optimal time for sampling is 30 – 40 days after emergence. Suspect plants should be dug from the soil – try to keep some of the soil with the roots. Keep samples away from excessive heat. Samples can be taken to any local county Extension office for mailing or mailed directly to the Plant Disease Diagnostic Lab. Specific instructions on sample collection and mailing can be found at http://www.plantpath.k-state.edu/extension/diagnostic-lab/shipping-guidelines.pdf.

There are several commercially available seed treatment nematicides currently marketed, but in university trials, results have been inconsistent. In-furrow nematicides may also be used at planting time. Since root lesion nematode has a wide host range, crop rotation has limited benefits. Other plant-parasitic nematodes that occasionally result in losses include the sting, stunt and stubby-root nematodes.

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3. Late planting of soybeans: Management considerations

Soybean planting progress in Kansas is ahead of last year's growing season but still there are soybean fields to get planted. In the latest Crop Progress and Condition report from Kansas Agricultural Statistics (June 4, 2018), soybean planting was at 79% complete, ahead of 56% for last year and the long-term average of 50%.

Looking back a little to the historical planting dates for our state, in recent decades Kansas producers have been planting soybeans slightly earlier -- at the rate of about one-third day per year (Figure 1). In the past three growing seasons (2015-17), however, the "50% planting date" mark was achieved at a similar time (first week of June) statewide. Moreover, the same "50% planting date" mark was attained in 1980 as this current growing season, averaging 50% planting progress by June 1. Nonetheless, for this current growing season (2018), planting date is way ahead and similar to the 2014 season, and it has reached 50% planting across the state by May 21.

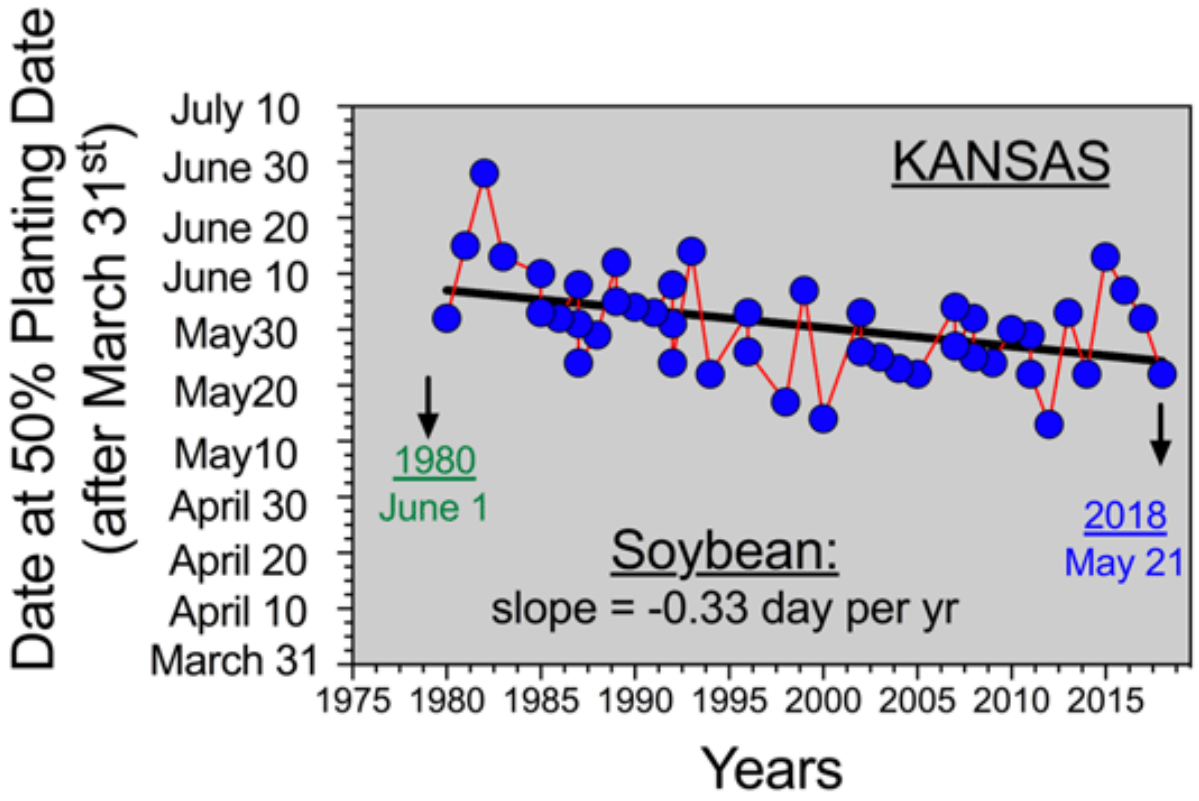


Figure 1. Trend in the date at which 50% of planting progress was achieved for soybean from 1980 to 2018 in Kansas. Source: USDA-NASS.

In few of the places where soybean planting has been delayed (or in double crop soybean systems), producers should consider a few key management practices. Planting soybeans in the right soil conditions is essential for establishing an adequate soybean canopy and improving chances to

increased yield potential.

Figure 2. Late-planting soybeans (June 10) into adequate soil conditions. Photo by Ignacio A. Ciampitti, K-State Research and Extension.

Maturity group factor: From our 'planting date x maturity group' study in 2014, 2015, and 2016, late planting did not clearly result in a yield reduction at the dryland sites, and caused only a minimal yield reduction at the irrigated site. Medium maturity groups (ranging from 3.8 to 4.8) yielded better, depending on the site and growing season evaluated (Figures 3, 4, and 5). More information related to this study can be found in Agronomy eUpdate issue 689 April 20, 2018 at: https://webapp.agron.ksu.edu/agr_social/eu_article.throck?article_id=1799

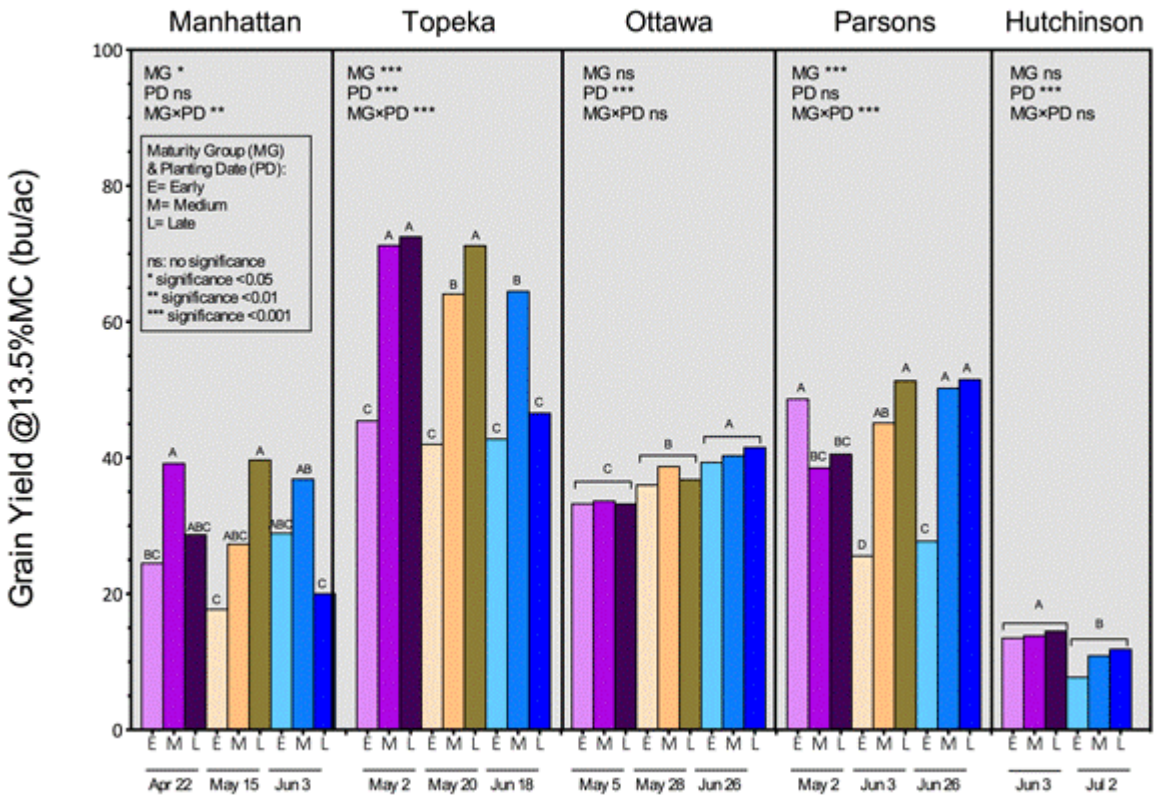


Figure 3. Soybean yields with different planting dates (early, mid, and late) and maturity groups (E = early, M = medium, L = late maturing groups) at five locations across Kansas for the 2014 growing season.

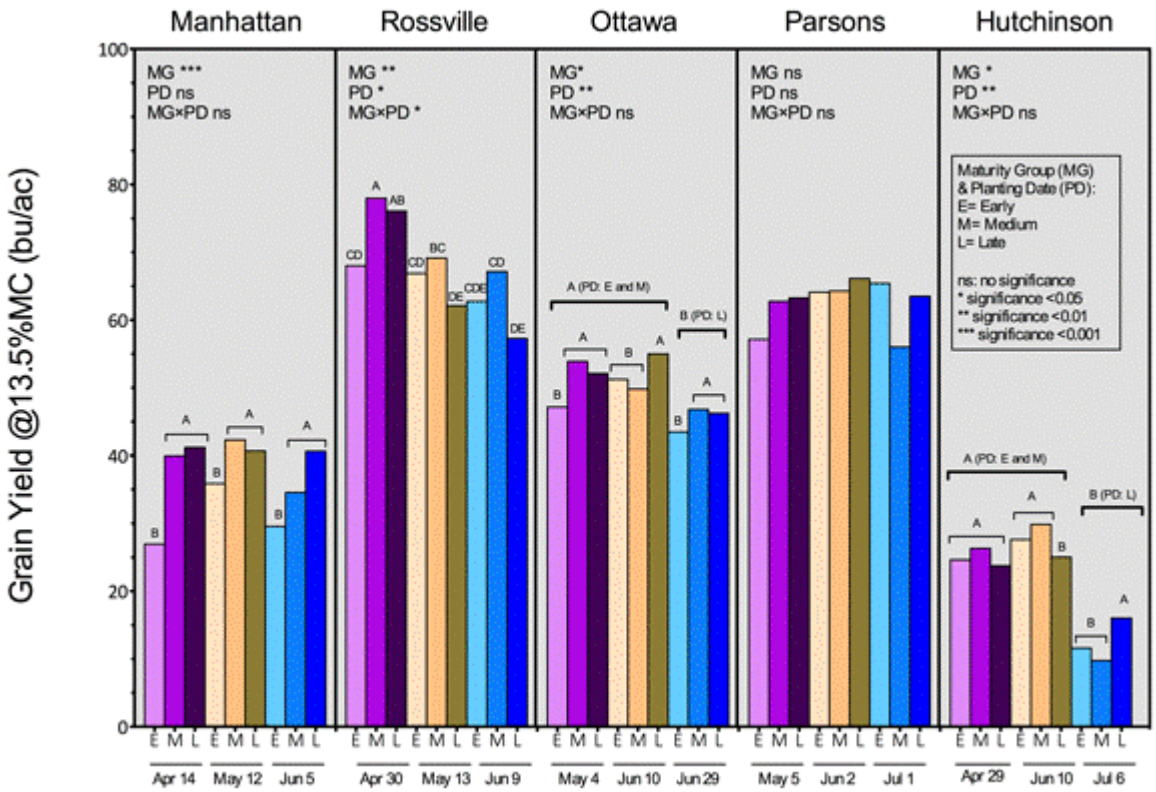


Figure 4. Soybean yields with different planting dates (early, mid, and late) and maturity groups (E = early, M = medium, L = late maturing groups) at five locations across Kansas for 2015 growing season.

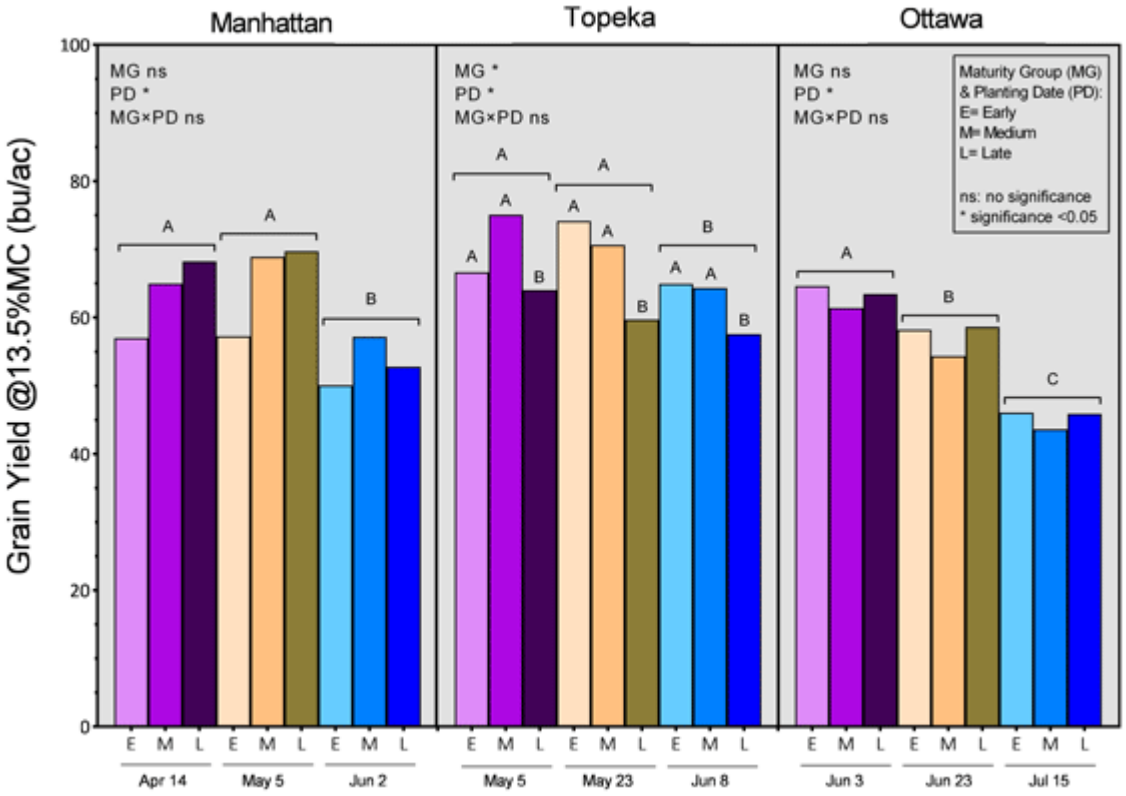
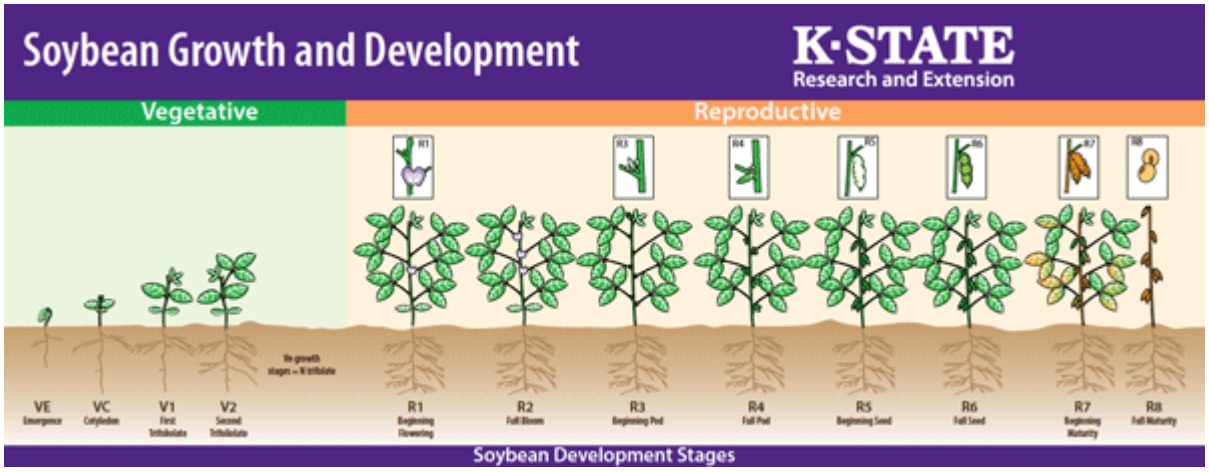


Figure 5. Soybean yields with different planting dates (early, mid, and late) and maturity groups (E = early, M = medium, L = late maturing groups) at three locations across Kansas for 2016 growing season.

Seeding rate factor: Increasing the seeding rate of late-planted soybeans by 10-20% as compared to the optimal seeding rate can help compensate for the shortened growing conditions. Research information on seeding rate and late planting of soybeans is currently being investigated further, with more updates on this topic in future issues of the Agronomy eUpdate. The same soybean cultivar planted early in the planting window, under normal conditions, will develop nearly 50% more productive nodes than when planted in late June: 19-25 nodes when planted early vs. 13-16 nodes when planted late. For soybean seeding rates and optimum plant populations, see Agronomy eUpdate issue 689 April 20, 2018 at:
https://webapp.agron.ksu.edu/agr_social/eu_article.throck?article_id=1798

Row spacing factor: Information on late-planted soybeans across multiple row spacing suggests that narrow-rows (e.g. 7" or 15" vs. 30") can hasten canopy closure, increasing season-long light interception, weed suppression, and potentially improving biomass and final yield. In some cases, the likelihood of a positive yield response to narrow rows increases as the planting is delayed later in the season.

Finally, proper identification of soybean growth stages can make a difference in yield. We have worked with the United Soybean Board and the Kansas Soybean Commission recently to produce a soybean growth and development chart. It can be downloaded at:
https://www.bookstore.ksre.ksu.edu/pubs/MF3339.pdf



More information about key aspects of each growth stage and management practices can be found in that soybean chart.

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4. Chemical control of roughleaf dogwood and smooth sumac

Roughleaf dogwood (*Cornus drummondii*) and smooth sumac (*Rhus glabra*) are native shrubs found throughout the eastern two-thirds of Kansas. Roughleaf dogwood is commonly found along fencerows, the edge of trees, on streambanks, and in open prairies. Smooth sumac occurs on roadsides, fencerows, burned areas, and rangeland. Roughleaf dogwood does provide wildlife cover and nesting sites for birds and smooth sumac fruits are consumed by pheasants, quail, turkey, and many songbirds. White-tail deer like the fruit and stems of smooth sumac. Roughleaf dogwood blooms with white flowers in late May and early June and produces white, round fruit in September and October. Smooth sumac generally flowers in June and produces red fruit in August and September. The developing head of smooth sumac resembles a loose milo head.

Roughleaf dogwood is rarely grazed and invades grassland in the absence of prescribed burning. The species continues to spread on the Konza Prairie, especially on sites with a 4-year burning frequency. Pastures that are frequently burned usually do not have a roughleaf dogwood problem. Once established, roughleaf dogwood is difficult to remove with fire alone as the plant usually leafs out after the burning season. Long-term late spring burning may gradually reduce roughleaf dogwood stands. Late-spring burning will keep smooth sumac shorter in stature, but generally increases stem density.

Figure 1. Roughleaf dogwood on Konza Prairie watershed with 10-year burning frequency. Photo by Walt Fick, K-State Research and Extension.

The optimum time to spray roughleaf dogwood and smooth sumac is between the flower bud state and early seed production. This time frame corresponds to increasing food reserves in the root/crown of these species.

Figure 2. Roughleaf dogwood in full bloom in Riley County. Photo by Walt Fick, K-State Research and Extension.

Figure 3. Smooth sumac in early seed production stage. Photo by Walt Fick, K-State Research and Extension.

A number of foliar-applied herbicides including triclopyr (Remedy Ultra), dicamba (Banvel), and picloram (Tordon 22K), used alone or in combination with 2,4-D, will defoliate roughleaf dogwood, but actual mortality is usually less than 25%. Roughleaf dogwood can be difficult to control. High-volume treatments providing greater than 50% mortality include 1% PastureGard (triclopyr + fluroxypyr), 0.5% Surmount (picloram + fluroxypyr), and 1% Grazon P+D + 0.5% Remedy Ultra (picloram + 2,4-D + triclopyr). All these herbicides are applied with water. Adding a 0.25 to 0.5% v/v non-ionic surfactant may enhance control. Smooth sumac is controlled with 2-3 pints/acre 2,4-D with ground or aerial application.

Aerial applications should be applied in a minimum 3 gallons per acre total spray solution to insure adequate coverage. Broadcast rates for roughleaf dogwood control would include 3-6 pints/acre Surmount or combinations of picloram + 2,4-D + triclopyr, e.g. 1 pt/acre Tordon 22K + 2 pt/acre 2,4-D + 1 pt/acre Remedy Ultra or 4 pt/acre Grazon P+D + 1 pt/acre Remedy Ultra.

A single application of any herbicide does not completely eliminate roughleaf dogwood, but may open up the stand enough to carry a fire. In subsequent years, a combination of prescribed burning in the late spring followed by a herbicide application 4-6 weeks post burning should provide good control.

Soil-applied materials such as Spike 20P (tebuthiuron) and Pronone Power Pellets (hexazinone) can provide control of roughleaf dogwood and smooth sumac. Spike 20P should be applied during the dormant season at 0.75 ounces product per 100 square feet. This is equivalent to 20 pounds of product per acre. Pronone Power Pellets should be applied when the soil is moist and rainfall is expected within 2 weeks of application. For plants 3-6 feet tall apply 2-4 pellets at the base of the plant. Expect to see grass damage following use of Pronone Power Pellets.

These dry soil-applied products may be useful in areas where spray drift may cause considerable non-target damage.

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5. Soil of the Month for May: Quinlan

Red soil and red meat

Did you know that the Southern Great Plains produces 25% of the nation's red meat? Get along little doggies and get ready to meet a red soil this month: Quinlan. (Disclaimer: Title is supposed be cute. Red soils don't cause red meat).

The Quinlan series can be found in the Central Rolling Red Plains of south central Kansas, Oklahoma, and Texas (Figure 1). When you see this soil, "red dirt" will cross your mind (but please save the word "dirt" for soil out of place). The parent material for the soil is from sediments weathered from really old sandstone bedrock (250-298 million years old).

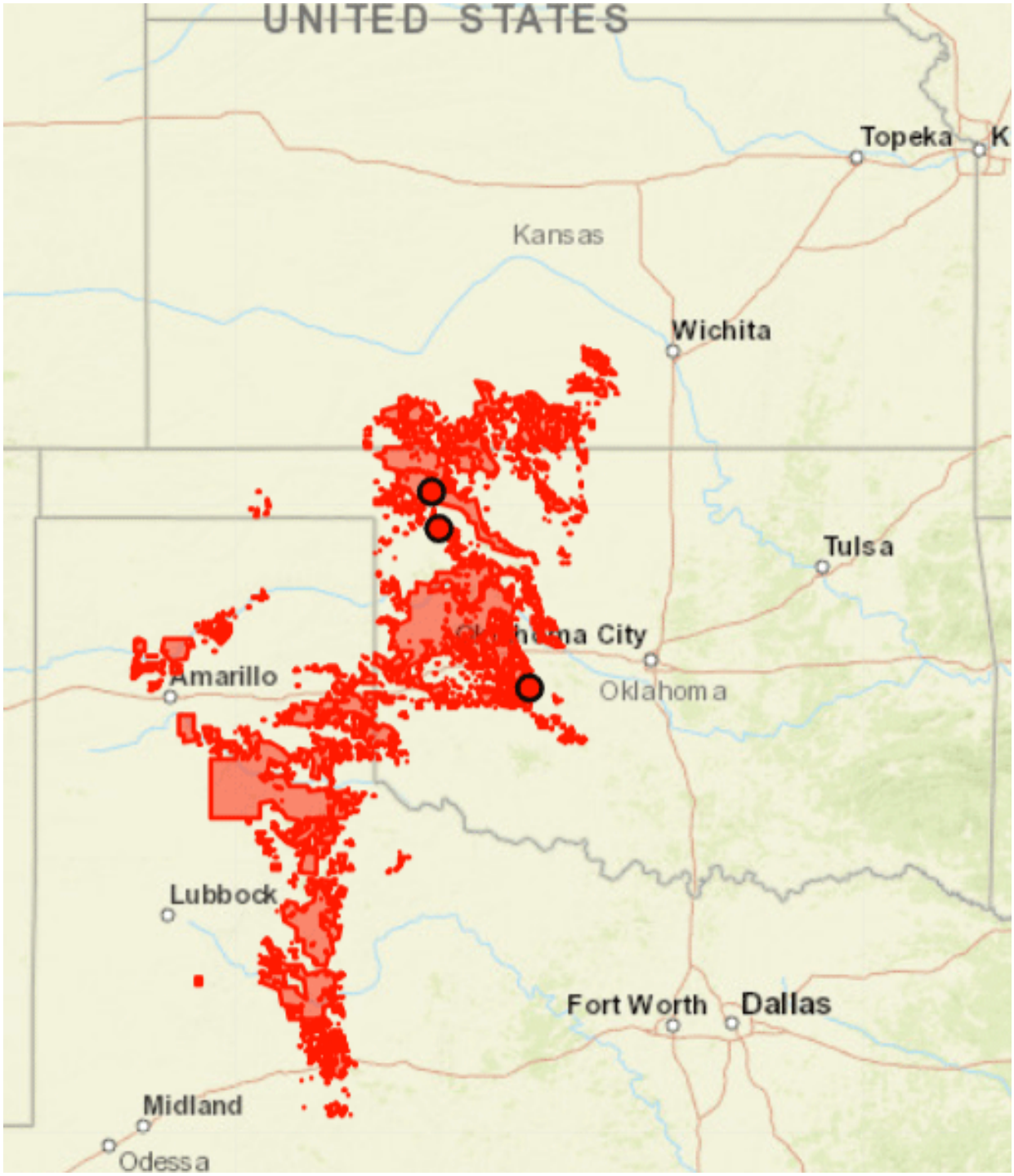

Figure 1. Soil series extent map for the Quinlan soil series showing its extent in Kansas, Oklahoma, and Texas. Map created using USDA-NRCS Official Soil Series Description website.

How do soils get their colors?

There are lots of reasons, but the driving forces are two of the five soil forming factors: *weather* (heat and water) and *parent material* (minerals). The hotter and wetter an environment is, the more that

minerals weather and break down. In the hottest, wettest places on earth (tropical rainforests), you will find the reddest soils. In south central Kansas, Oklahoma, and Texas, we have a lot of heat and some moisture, and that creates reddish-soils. Why? Because as minerals weather (break down), iron minerals such as goethite become the most prevalent and they weather very slowly. The Quinlan soil series has about 8 inches of topsoil, a few inches of red subsoil, and red sandstone bedrock at about 1 foot below the soil surface (Figure 2).

Figure 2. Quinlan soil monolith. Note the lack of soil horizon development, shallow profile depth, and reddish soil color. Photo by DeAnn Presley, K-State Research and Extension.

Not your typical Kansas soil

The topsoil in the Quinlan series is reddish brown, and that's why it is not a mollisol. Back in our first Soil of the Month article (January/February), we explained that mollisols are formed from many, many years of prairie vegetation dying and enriching the soil in soil organic matter, giving mollisols their distinctive black color. The Quinlan soil does not contain very much soil organic matter. Remember our discussion earlier about heat coupled with some moisture causing Quinlan soils to be red? Hot temperatures and some moisture lead to rapid decomposition by microbes, and so soil organic matter (dark brown or black) doesn't have much of a chance to accumulate.

So if it's not a mollisol, how does the Quinlan classify? It's an **Inceptisol**, which means that it is a pretty simple soil: Just an A horizon, a weak B (subsoil) horizon, and the C horizon which is soft sandstone. Inceptisol comes from the Latin word *inceptum*, which means beginning. Inceptisols are just beginning to show signs of profile development. You might think of these as "immature" soils.

There are over 1,500,000 acres of Quinlan soils mapped in the U.S., the majority of which are used for grazing but crops are sometimes grown on lesser slopes. Figure 3 is a photo of a Quinlan soil in Harper County, Kansas. Triticale for grazing was drilled into the previous year's crop residues. Grazing cropland is an expanding practice, and many resources on this topic can be found at www.greatplainsgrazing.org.

Figure 3. Triticale no-tilled into crop residue on a Quinlan soil, grazed by cattle. Photo by DeAnn Presley, K-State Research and Extension.

For more information on soil color, see "*The Color of Soil*", USDA-NRCS:
https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2_054286

Here are links to the previous Soil of the Month articles for 2018:

- January/February: Colby and Ulysses
- March: Dwight
- April: Pawnee

The release of the May Soil of the Month article was delayed due to network issues associated with the Hale Library fire that occurred toward the end of May. Stay tuned in a couple of weeks for our June soil!

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6. Hybrid selection tool now available for Kansas corn producers

Choosing a corn hybrid to plant can be a daunting decision, especially when basing your selection on accessible performance data. Farmers and consultants are often tasked with having to navigate several web pages or sites looking for timely information. Recently, the Kansas Corn Commission funded a project to collect corn performance trial data, along with any research/on-farm yield data conducted in Kansas, to develop an online hybrid selection tool. The 2017 Kansas corn yield performance data from replicated variety trials was used for initial development of the tool, and is available for public viewing at myfields.info/crop-data.

The new tool allows for easy hybrid comparisons based on the user's location of interest. By aggregating plot trial data into one online tool, producers will soon be able to easily access performance data across years and locations of interest. The inclusion of on-farm data will enhance understanding of performance under varying management practices

To use the application, visit www.myfields.info and follow these steps:

1. Select the "Demonstration Plot Data" button from the home-screen (Figure 1, graphic A).
2. Select the most relevant plot location (red circles) within the map (Figure 1, graphic B) to view performance data.
3. In the plot data view (Figure 1, graphic C), the highest yielding corn hybrids are presented at the top of the list, which also displays an average county yield; this allows the user to quickly compare how their own yields measure up to plot averages.

As the project progresses, KSRE agents and specialists will be able to collect, organize, and upload standardized data to myfields.info website for viewing.

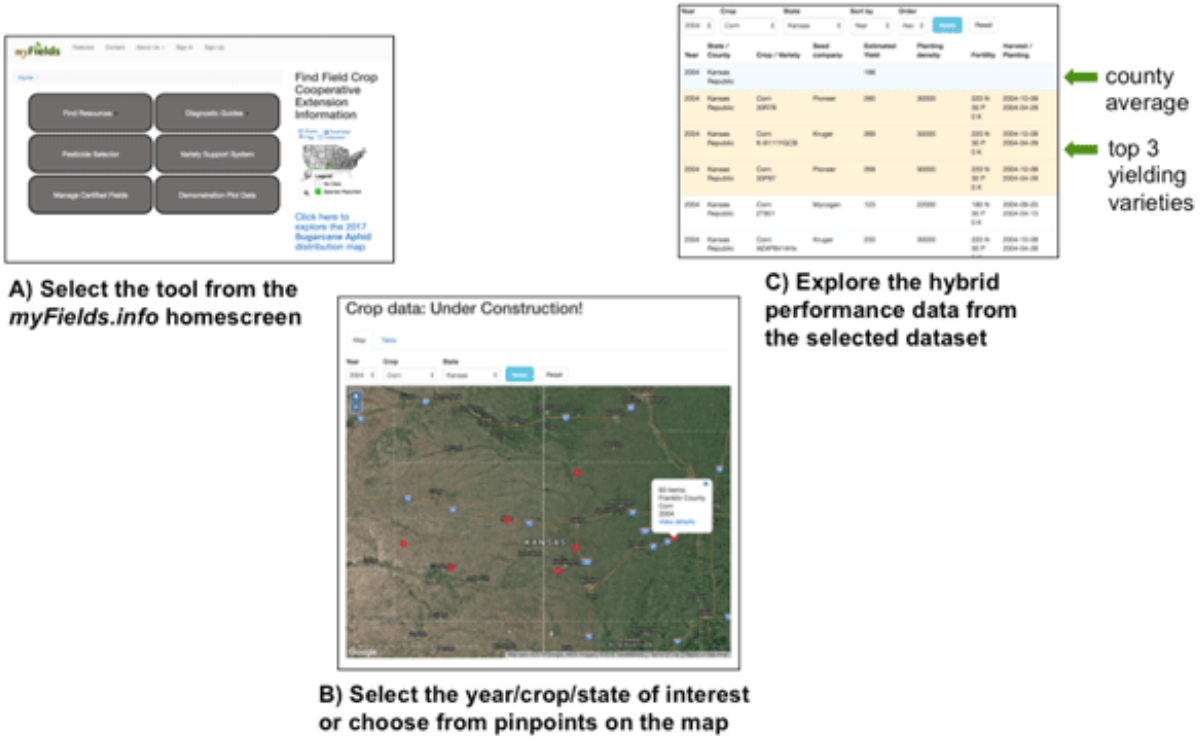

Figure 1. Examples of the myFields.info corn hybrid selection tool.

Continued tool development will expand the ability to explore hybrids by displaying yields in a simple graphic format. As a result, the user will be able to view hybrid yields across rating years, thus helping support the decision-making process by comparing yields in variable field conditions. Current plans are to expand the decision-support tool into other corn applications such as recommendations for corn rotation into other cropping system frameworks. We encourage you to explore the tool at myfields.info to see 2017 Kansas Corn performance data. Please direct any questions or suggestions to site coordinator, Dr. Wendy Johnson at wendyann@ksu.edu.

This project is led by K-State researchers: Ignacio Ciampitti and Yared Assefa Mulisa (Department of Agronomy); and Brian McCornack and Wendy Johnson (Department of Entomology). The project team also collaborated with Jane Lingenfelser, agronomist and Kansas Crop Performance Tests Coordinator (Department of Agronomy).

The myFields decision support system was launched in 2014 through financial support by the USDA-Extension Implementation Program. The web-based application is designed to deliver integrated Extension information and related content to stakeholders using dynamic features, which includes interactive tools and resources that link together information from different agriculture-centric disciplines. Learn more about our other site features here: www.myfields.info/features.

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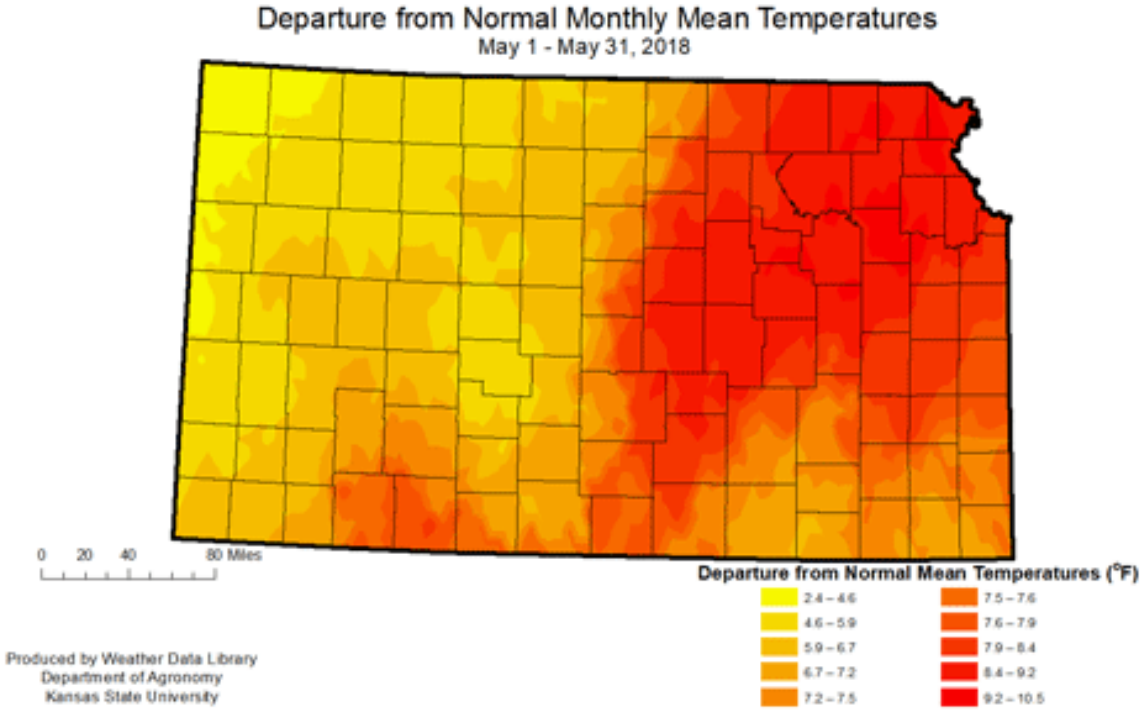
7. Kansas weather summary for May: Summer heat arrives early

May brought the heat

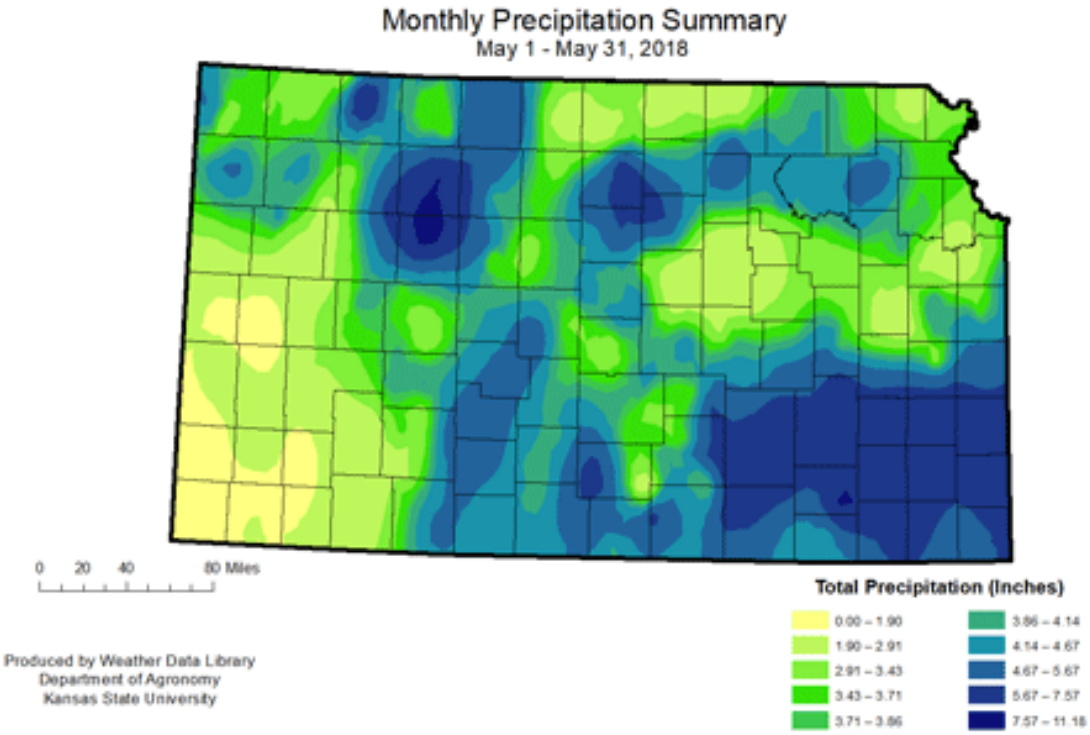
May came close to setting the record as the hottest since 1895. The state-wide average temperature for the month was 70.6 degrees F. This was 7.2 degrees warmer-than-normal, and ranked as the second warmest. The swing from the cold of April to the warmth of May was the largest change on record at 23.7 degrees. The Northeast Division had the greatest departure with an average of 72.4 degrees F which was almost 9 degrees warmer than the long term average. The Northwest Division came closest to normal with an average of 64.5 degrees F, which was a departure from normal of +4.6 degrees. There were 90 new record daily warm maximum temperatures, of which 6 set new record warm maximums for the month. In addition, there were 60 new daily record warm minimum temperatures, of which 1 set a new record for the month. This month, there were no new records on the cold side for either coldest maximum or coldest minimum temperatures. This is one reason that the monthly average was so much warmer-than-normal with relatively few records. The warmest temperature reported during the month was 103 degrees F at Abilene, Dickinson County on the 29th. The coldest temperature reported during May was 35 degrees F, reported at Syracuse, Hamilton County, on May 4.



May also brought some rain

While May continued the pattern of below-normal precipitation, it was much closer to normal. The state-wide average precipitation was 3.92 inches which was 94 percent of normal. Since May was much warmer-than-normal, the benefit from that precipitation was less than it might have been. The division with the largest surplus was the West Central Division, with an average of 3.66, or 114 percent of normal. The East Central Division had the greatest departure, with an average of 3.48 inches or 67 percent of normal. The greatest monthly total for a National Weather Service

Cooperative station was Wakeeney, Trego County, with 11.88 inches. The Community Collaborative Rain, Hail and Snow network station with the greatest monthly precipitation was Latham 0.2 W, Butler County, with 8.95 inches. Among the Kansas Mesonet stations, the Hill City station in Graham County had the greatest total at 7.49 inches.



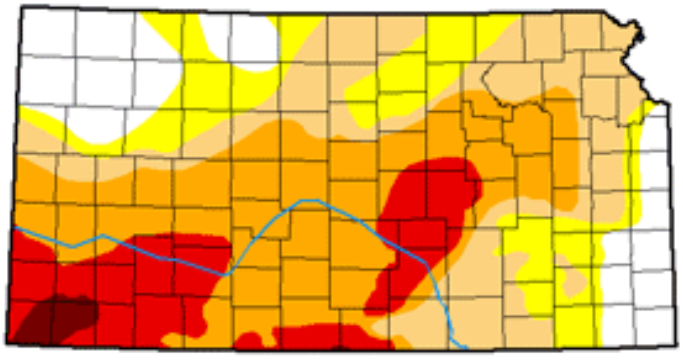
Severe weather update

With the resurgence of moisture, severe weather reports during the month also increased. With 34 tornadoes reported, it was slightly higher than the average of 24 (based on 1950-2016 SPC data), and makes a slight dent in the late start to the season. There were 258 hail reports and 131 damaging wind reports. One of the most destructive events was the heavy flooding in Graham and Gove counties, where widespread rainfall amounts in excess of 4 inches were reported.

Drought update

The northwest and southeast corners of Kansas remain drought-free, and there was some reduction in the most severe drought categories. Exceptional drought conditions now cover just under 2 percent of the state, while extreme drought covers an additional 14 percent of the state. Severe drought has expanded to 30 percent of the state while moderate drought covers an additional 23 percent of the state. The June outlook has a slight chance for drier-than-normal conditions across the state. The temperature outlook is for warmer-than-normal temperatures statewide. Unfortunately, that forecast combination is unlikely to result in significant improvement of the drought conditions.

U.S. Drought Monitor
Kansas



Author:
Anthony Artusa
NOAA/NWS/NCEP/CPC

http://droughtmonitor.unl.edu/

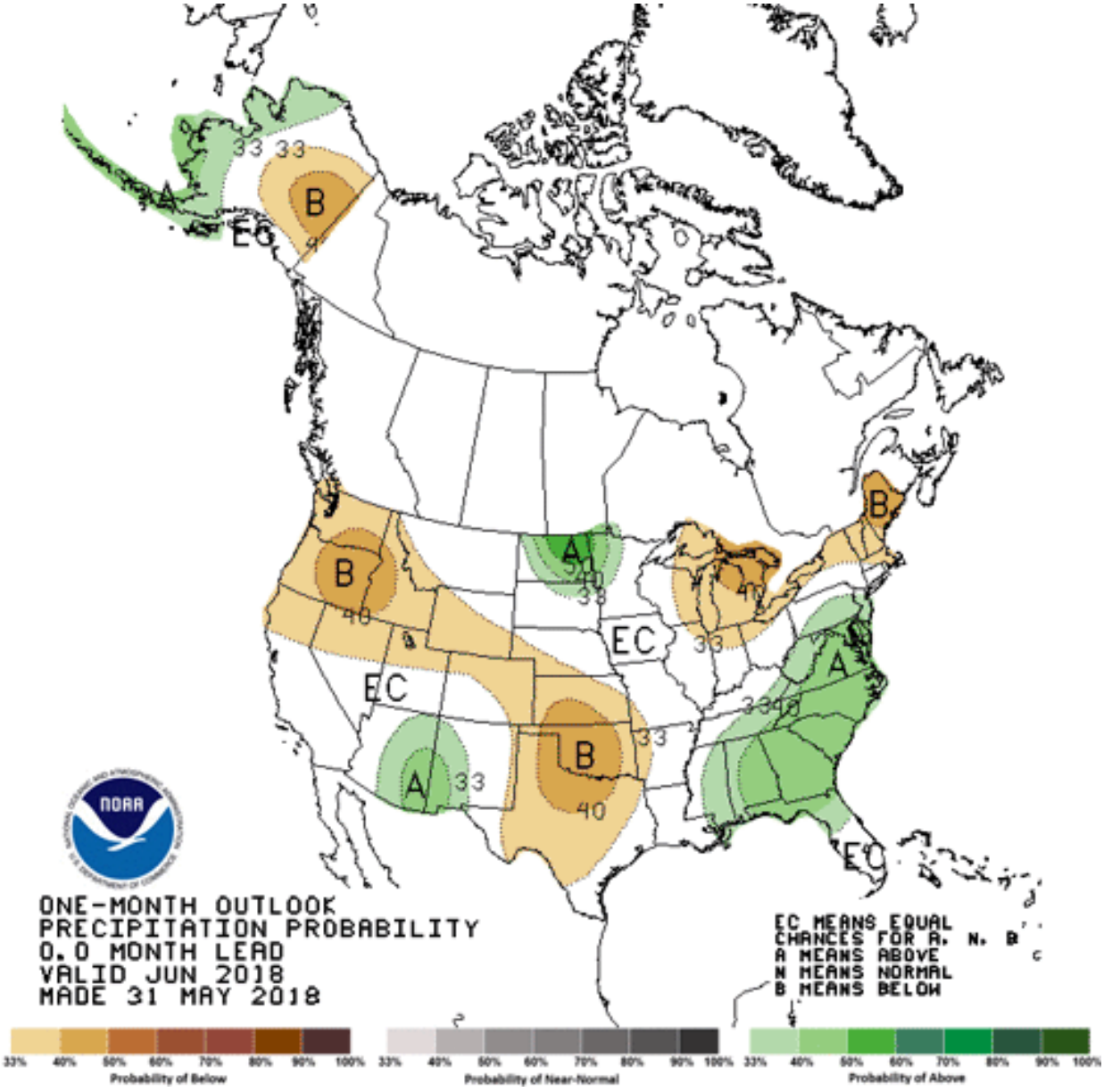
May 29, 2018
(Released Thursday, May. 31, 2018)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	15.19	15.41	23.44	30.11	14.38	1.47
Last Week 05-22-2018	7.95	16.77	27.93	31.51	14.25	1.60
3 Months Ago 02-27-2018	1.22	25.28	39.05	24.94	9.50	0.00
Start of Calendar Year 01-02-2018	0.00	67.30	23.95	8.75	0.00	0.00
Start of Water Year 09-26-2017	59.89	30.03	8.73	1.35	0.00	0.00
One Year Ago 05-30-2017	100.00	0.00	0.00	0.00	0.00	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.



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May 2018 Kansas Climate Division Summary										
	Precipitation (inches)						Temperature (°F)			
	May 2018			2018 through May					Monthly Extremes	
Division	Total	Dep. [1]	% Normal	Total	Dep. [1]	% Normal	Ave	Dep. [1]	Max	Min
Northwest	3.12	-0.34	89	4.81	-3.02	61	64.5	4.6	99	39
West Central	3.66	0.63	114	5.50	-1.93	72	67.5	6.6	100	37
Southwest	2.67	-0.06	97	4.11	-2.64	60	70.0	6.2	98	35
North Central	3.57	-0.51	84	6.04	-4.05	59	70.6	7.4	100	43
Central	3.86	-0.41	93	6.67	-4.21	62	71.9	7.6	103	40
South Central	4.63	0.24	107	8.20	-3.51	69	73.1	7.8	96	44
Northeast	3.39	-1.40	74	6.55	-5.70	54	72.4	8.6	99	48
East Central	3.48	-1.67	67	7.96	-5.67	57	72.7	8.5	97	49
Southeast	6.41	0.62	112	12.21	-3.45	78	73.1	7.7	99	45
STATE	3.92	-0.25	94	6.98	-3.71	64	70.6	7.2	103	35

1. Departure from 1981-2010 normal value

2. State Highest temperature: 103 °F at Abilene 1W, Dickinson County, on the 26th.

3. State Lowest temperature: 35 °F Syracuse 1NE, Hamilton County, on the 5th.

4. Greatest 24hr: 6.65 inches at Hill City 1E, Graham County, on the 29th (NWS); 9.88 inches at Morland 9.7 S, Graham County, on the 29th (CoCoRaHS).

Source: KSU Weather Data Library

Mary Knapp, Weather Data Library
mknapp@ksu.edu

8. K-State Tillage Field Day planned for June 13, Garden City

K-State Research and Extension will host a Tillage Field Day on Wednesday, June 13 to share research findings regarding no-till and several tillage systems. Crop producers' struggles to manage herbicide-resistant weeds are prompting many who'd adopted no-till systems to consider reverting back to tilling their fields. K-State welcomes producers to come view the benefits and costs of incorporating tillage in their cropping system.

The field day will be at the Southwest Research-Extension Center, 4500 East Mary St. in Garden City, beginning with registration at 10 a.m. Lunch, compliments of several sponsors, will be served.

Topics to be covered include:

- View a five-year study comparing no-till to occasional tillage.
- Weed management, agronomics, soil health, and economics of long-term no-till and tillage systems.
- Company demonstration of tillage equipment operating in the field.

More information is available by calling 620-276-8286.

KSU Tillage Field Day

SW Research-Extension Center
4500 East Mary St.
Garden City, KS
Questions call; 620-276-8286

June 13, 2018
Registration at 10:00
No cost - Lunch provided by sponsors

Topics:

- View a 5-year study comparing no-till to occasional tillage
- Weed management, Agronomics, Soil Health, and Economics of no-till and tillage systems
- Company demonstration of tillage equipment at the research center

Speakers:

- Dr. John Holman
- Dr. Augustine Obour
- Dr. Alan Schlegel
- Dr. Curt Thompson
- Dr. Monte Vandeveer
- Industry representatives

Industry Demo/Sponsors:

- American Implement/John Deere
- Great Plains
- Horsch
- Kalvesta Implement/AGCO
- KanEquip/New Holland
- Landoll
- Premier Tillage
- Sunflower

K-STATE
Research and Extension

9. K-State field pea plot tours: June 6, 14, and 15

K-State Research and Extension will be hosting a series of field pea plot tours on June 6, 14, and 15. Topics will include variety selection, herbicide options, disease management, production practices, producer experiences, and pea plant growth and development.

Republic County/North Central Experiment Field, Wednesday, June 6 at 8:30 a.m.

- Performance test with 12 entries, seeding rate study and seed treatment study
- Held in conjunction with K-State wheat variety and research plot tour

Directions: 1.25 miles west of Belleville on US 36

Rawlins County, Thursday, June 14 at 4:00 p.m.

- Variety performance test with 20 entries, seeding rate study, and seed treatment study
- Wheat plot tour to follow at 5:30 (CT) with a light supper

Directions: From the intersection of Hwy US 36 and K-25 in Atwood go 6 miles north on K-25

Gove County, Friday, June 15 at 8:30 a.m.

- Variety performance test with 12 entries, seeding rate, seed treatment, and in-furrow fertility studies

Directions: From Grainfield/Hoxie exit on I-70 go ¾ miles south on Road 50, 1 mile east on Road BB, 1 mile south on Road 52, ¾ mile east on Road AA

Thomas County/Northwest Research-Extension Center, Friday, June 15 at 1:00 p.m.

- Variety performance test with 30 entries, seeding rate study, and fertility studies
- Lentil variety evaluation and field pea breeding trials

Directions: 105 Experiment Farm Road, Colby, KS. Come in the main drive and follow the signs.

For questions or more information please contact:

Lucas Haag, K-State Northwest Area Agronomist
(785) 462-6281, LHaag@ksu.edu

K-STATE
Research and Extension

2018 Field Pea Plot Tours

Rooks County, May 31st, 11:00 AM

- Variety Performance Test with 12 entries
- Seeding rate study, seed treatment study, and in-furrow fertilizer study
- 5 Miles North of Stockton on US 183, east on E road 3 ½ miles.
- Lunch to follow in Stockton with wheat plot tour starting at 2:00 PM

Republic County / North Central Exp. Field, June 6, 8:30 AM

- Variety Performance Test with 12 entries, seeding rate study, and seed treatment study
- Held in conjunction with K-State wheat variety and research plot tour
- 1 ¼ miles west of Belleville on US 36

Rawlins County, June 14, 4:00 PM

- Variety Performance Test with 20 entries, seeding rate study, and seed treatment study
- Wheat plot tour to follow at 5:30 CT with light supper
- From the intersection of Hwy US 36 and K-25 in Atwood go 4 miles north on K-25

Gove County, June 15, 8:30 AM

- Variety Performance Test with 12 entries, seeding rate, seed treatment, and in-furrow fertility studies
- From Grainfield/Hoxie exit on I-70 go ¾ miles south on Road 50, 1 mile east on Road BB, 1 mile south on Road 52, 3/4 mile east on Road AA

Thomas Co. / Northwest Research-Extension Ctr., June 15, 1:00 PM

- Variety Performance Test with 30 entries, seeding rate and fertility studies
- Lentil variety evaluation and field pea breeding trials
- 105 Experiment Farm Road, Colby, KS. Come in the main drive and follow the signs

K-State faculty, industry representatives, and experienced producers will be on hand to discuss pea growth and development, variety selection, herbicide options, production practices, disease management, and producer experiences.

All Times Are Central. For questions or more information contact:

Lucas Haag, K-State Northwest Area Agronomist (785) 462-6281, LHaag@ksu.edu

Field pea information and research results can be found at:
www.northwest.ksu.edu/agronomy