1. **Potassium deficiency problems showing up in corn**

We are seeing a large number of corn fields across the state, especially non-irrigated corn in the eastern part of the state, with potassium (K) deficiency symptoms. The symptoms are showing up in a wide variety of field patterns, and on fields with all kinds of K soil test levels. What is going on? Basically, the problems are mostly the result of the stage of growth the corn is in (V-4 to V-6) combined with dry soil conditions and root development issues. There are many combinations of these factors this year, resulting in many different scenarios.

The basic issue, of course, is that potassium has to reach the plant roots before it can be absorbed by the plant. This becomes a physical and chemical problem. There has to be enough potassium in the soil, it has to get dissolved into soil water, the dissolved potassium in the soil solution has to move easily through the soil pores to the plant roots, and there has to be an extensive root system present to come into contact with the potassium dissolved in soil water.

**Nutrient movement to the plant root**

Water -- and the uptake of water -- is critical to the movement of nutrients to the root surface. Some nutrients, such as nitrate-nitrogen (N), are very soluble in water and move to the root as the plant takes up water. The process of dissolved nutrients moving toward plant roots in soil water is called mass flow. Nutrients such as nitrate-N, calcium, magnesium, and sulfur move to the root surface for uptake in this way.

Some nutrients are needed in large quantities, such as phosphorus (P) and K. These nutrients are not very soluble in water, however. As a result, concentration in the soil water is low and the P and K content in the soil water at the root surface is quickly depleted by nutrient uptake. This creates a diffusion gradient between the bulk soil water a short distance from the root and the water at the root surface. P and/or K then start to diffuse, or move to the root surface. Essentially all of the P, and 80 to 90% of the K, taken up by plants moves to the root by diffusion. The rate of diffusion of nutrients through soil is influenced by several factors, but the most important are: (1) the buffering capacity of
the soil, or its ability to add P or K to the solution (soil test level); (2) the size of the gradient, or difference in concentration of nutrient between the bulk soil water and the water at the root surface; and (3) the soil water content.

At high soil moisture, the pathway for diffusion is shorter, and the process runs more quickly because all the pores are full of water and the K ions can move in basically a straight line. But at low soil moisture the soil water in many pores in the soil is depleted and the pathway for diffusion becomes more tortuous as dead ends develop along the path. As a result, the diffusion distance becomes longer as the K goes one way and then another to avoid the dead ends or blockages created by dry pores. So, in dry weather, soil moisture becomes depleted, the pathway for diffusion becomes longer, and K availability to the plant is reduced by the slower rate of delivery.

**The nutrient uptake process**

Once the nutrients are delivered to the root surface, nutrient uptake can occur. Three factors determine the amount of nutrients that will move into the root:
* The concentration of nutrients at the root surface.
* The amount of root surface area (number of roots); and
* The amount of nutrient inside the plant, and the feedback that provides to the uptake process.

If the amount of water moving to the roots is limited, nutrient uptake is limited through the limitation of the delivery of nutrients to the root surface that creates. If the root system or root growth is limited -- by compaction or soil density and limited pore space (as in no-till) -- uptake is limited since each unit of roots has a finite maximum uptake rate. If the concentration of the nutrient in the soil is limited, either because you didn’t apply enough fertilizer or you put it on and it was lost, nutrient uptake is limited.

When nutrients dissolved in the soil water reach the surface of the root, the root selects the ions it needs and moves them across the cell membranes. The ions it doesn’t need remain at the root surface and accumulate. This process is highly selective and requires energy. In some special cases such as might occur with young wheat shortly after green-up, during a prolonged period of cool cloudy days which would limit photosynthesis, nutrient uptake could be limited by a lack of available energy.

**How growth stage of the corn impacts nutrient uptake**

One additional important issue impacting nutrient uptake is the growth stage of the corn, especially early in the season. When corn seed germinates, the radicle or seed root grows down and begins to expand and take up water along with a limited amount of nutrients. This seminal root system supports the corn seedling for the first 20-30 days, but it doesn’t grow deep, nor does it become very dense. Its job is primarily to take up water and anchor the plant until the permanent nodal root system develops.

About the 4-leaf stage, the nodal or crown root system will begin to develop, and the seminal roots will reach their maximum size. Around V-6 the nodal root system will begin to take over and the seminal system will begin to die. Between V-4 and V-6 or V-7, it’s not unusual to see plants exhibit pale green color, purple color, striping, and so forth as nutrients can be limiting. This is not because of a real deficiency of nutrients in the soil per se, but rather it is because of a limit in the amount of active roots available to take nutrients up as this root system transition occurs.
Any condition that will limit the delivery of nutrients to the root surface will aggravate this situation. This is why many people use starter fertilizer. Providing a high concentration of nutrients close to the plant helps overcome some of these problems created by limited root systems. While we can often see significant differences in growth at the V-4 to V-6 growth stage with starter, many times these differences seem to vanish as the nodal roots develop, and little or no yield benefit is seen.

**How tillage systems impact potassium movement in the soil**

In no-till soils, bulk density increases, and pore size distribution changes. There are commonly fewer, but bigger pores. With fewer pores, the nutrient diffusion route becomes longer. So if the soil becomes dry, and the big pores begin to empty out, the diffusion issue becomes even more of a problem in no-till than in conventional till.

**This year’s problems**

This year, plants that got off to a quick start are now at V-6 or V-7. The nodal roots are established and growing well, and the plants look pretty good. But there was a lot of uneven emergence. Where seeds were planted a little shallowly and the ground dried out, those seed may have come up a week later and are a leaf or two behind seed planted into moist soil. These later-emerging plants are smaller, pale yellow, and are showing K deficiency due to the dry conditions. The nodal roots on these plants are just getting started and they haven’t rooted as deeply yet as more developed plants.

In one case this year in Atchison County, small plants in spots of a field were found showing K deficiency and yellowing. These spots were surrounded by bigger corn in most of the field, which was greener and one or two leaves further advanced. The big corn had good roots. On the small corn, the nodal roots were only 2 or 3 inches long and just getting started. This is likely an issue of uneven emergence, along with some soil compaction. The soil test K level was good at 200-300 ppm. But all the reasons mentioned above were interacting to cause trouble. The big corn had a greater root density, so it could take up more nutrients under adverse conditions. With more moisture, the small plants will perk up as the root system develops more fully. There may not be a big yield difference in the end, but there will probably continue to be differences in growth stage and eventual maturity as the season goes on.

We have done some plant analysis on some of these problem fields this spring and most of them are showing the “bad” plants as being deficient in K. The problems are worse where the soil test K levels are low. But there are also problems even where soil test levels are high, caused by problems in delivery of available nutrients to the root surface for uptake.
Classic symptoms of potassium deficiency in corn.

Hybrid differences

Hybrid differences are also something to consider. We know that different hybrids will respond differently to nutrient deficiencies (particularly to phosphorus). This is likely related to differences in root growth early in the season. Because of all the conditions mentioned above, root growth habits of different hybrids will be particularly important this year, and relevant for K uptake. However, these differences in early growth do not always translate into yield differences at the end of the season. Certain hybrids may look “bad” early in the season, but provide a big advantage later.
Potassium deficiency in corn from the 2012 season, with an inverted yellow V on the leaf margins from the tip towards the base. One hybrid was able to pick up more K than the other, but both were adversely affected. Soil test K levels were above 160 ppm, so no additional potash was recommended. The field was no-till planted early on a clay loam to clay soil. The spring was cool. Photo by Stu Duncan, K-State Research and Extension.

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2. Doublecrop options after wheat

Doublecropping after wheat can be a high-risk venture, and certainly could be again this year unless it starts raining more often. 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 most common doublecrop 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 doublecrop or cover crop after wheat is the potential for herbicide carryover (see next article in this issue). 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 doublecrop options are discussed below.

**Soybean**

Soybeans are probably the most commonly used crop for doublecropping, especially in central and eastern Kansas. With glyphosate-resistant varieties, often, the only production cost for planting doublecrop 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 would 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. Later in the summer, a healthy soybean canopy may suppress weeds enough that a late-summer burndown application may be avoided.

Variety selection for doublecropping 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 doublecrop 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 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.

Adding some nitrogen (N) to doublecrop soybeans may be beneficial also if the previous wheat yield was high and depleted soil N. 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.

Recommended seeding rates for doublecrop soybeans are no different than for soybeans planted at a typical planting date in a given area or cropping system. Narrow row spacing 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. 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. 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 doublecrop 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 doublecrop soybeans in central and northeast Kansas. In experiments near Manhattan in recent years, yields were around 25 bushels per acre in 2008 and 2009, 42 bushels per acre in 2010, and only about 8 bushels per acre in 2011, illustrating the huge impact of rainfall amount and distribution. Doublecrop soybean yields typically are much better as you move farther southeast in Kansas.

**Sorghum**

Sorghum is another doublecrop option. Unlike soybeans, sorghum hybrids for doublecropping should be earlier maturing. Sorghum development is primarily driven by accumulation of heat units and the doublecrop 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.

Doublecrop 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 doublecrop sorghum. Warm-season annual grasses such as crabgrass can reduce doublecrop sorghum yields. Using a chloracetamide-and-atrazine preemergence product may be key to successful doublecrop sorghum production.

No-till sorghum studies at Hesston documented 4-year average doublecrop 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 doublecrop 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 doublecrop 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 doublecropping 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 doublecrop 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, doublecrop 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 bioytypes).

**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 doublecrop 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 doublecrop 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 doublecrop 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 doublecrop 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.

**Profitability**

The K-State Department of Agricultural Economics has crop budgets for doublecropped soybeans and sunflowers in eastern and central Kansas at:
http://www.agmanager.info/farmmg/fmg/nonirrigated/

**Volunteer wheat control**

One of the issues with doublecropping 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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3. Herbicide carryover considerations when doublecropping after wheat

Many of the commonly used sulfonylurea herbicides, including Ally, Ally Extra, Finesse, Glean, Amber, Peak, Rave, Maverick, Olympus, Olympus Flex, and PowerFlex are persistent and have fairly long crop rotation guidelines which can affect doublecropping options. Each product is different and has unique rotation guidelines, so always consult the respective product label for specific crop rotation intervals. In some cases, there are supplemental labels with shorter rotation guidelines.

In general, the most tolerant summer crop to residues of these herbicides is STS soybeans, followed by grain sorghum. Product labels tend to specify grain sorghum, but forage sorghum and sudangrasses may have similar levels of tolerance. One major exception to this guideline is sorghum and Maverick herbicide. Sorghum is extremely susceptible to Maverick and should not be planted for at least 22 months after application.
Producers who want to doublecrop sorghum after wheat that has received one of these sulfonylurea herbicides should wait as long as possible to plant. Ideally, sorghum should not be planted on these fields until mid- to late-June.

Cotton and non-STS soybeans are generally intermediate in tolerance to these herbicides. Corn, sunflowers, canola, and alfalfa tend to be the most susceptible crops to the sulfonylurea herbicides and have rotation guidelines of 9 months or longer.

Wheat fields that have been treated with Beyond herbicide can be doublecropped with any type of soybean or Clearfield sunflowers, but not to sorghum or corn.

Most other commonly used wheat herbicides in Kansas have very short crop rotation restrictions.

As mentioned earlier, always refer to the specific herbicide label regarding crop rotation guidelines and restrictions. Label guidelines for crop rotation are often complicated by soil pH and geography. Some product labels have very rigid crop rotation restrictions, while other labels allow shorter intervals in the case of catastrophic crop failure, as long as the producer is willing to accept the risk of crop injury. Another confusing issue may be the existence of supplemental herbicide labels with shorter crop rotation guidelines than the regular label. Herbicides with supplemental crop rotation labels include Finesse, Ally, and Ally Extra.

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4. Flash drought -- Kansas weather in May 2012

May signaled a large turnaround from April in terms of weather. While the temperatures continued warmer than average, the precipitation was much below average. Preliminary numbers indicate the statewide average temperature of 68.7 degrees F was 5.1 degrees warmer than normal. This marked it as the 3rd warmest May on record for the state. The warmest May occurred in 1962, when the statewide average temperature was 71.2 degrees F. The western divisions had the smallest departures from average, with northwest Kansas averaging 64.3 degrees F, or 3.8 degrees warmer than normal. The South Central Division, with an average of 71.2 degrees F was the warmest at 5.9 degrees above normal. The highest reading was 102 degrees F at Hill City on the 26th. The coldest reading for the month was 31 degrees F at Oberlin on the 9th.

Preliminary statewide average precipitation was 1.10 inches, which was only 26% of normal. This makes it the second driest May since 1895. The Southeast Division was the wettest in overall precipitation at an average of 2.04 inches, or 40% of normal. The North Central was the driest, with an average precipitation of 0.38 inches or 9% of normal. Three days saw no reports of precipitation, and on 10 days the statewide average was zero, with only isolated reports of moisture. Only four days had an average precipitation greater than 0.10 inches.
The latest Drought Monitor showed an increase in the area of abnormally dry and moderate drought categories. Biggest improvement was a reduction in the area covered by exceptional to extreme drought. The exceptional drought no longer is listed in the state. Currently, almost 86% of the state is reported as abnormally dry to extreme drought. The latest Drought Outlook indicates drought conditions are expected to continue in the southwestern portions of the state. The La Niña has ended. For June, the probability is equally likely for wetter or drier than average conditions in the state. Temperatures are expected to continue above average.

### Table 1
**May-12**

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<th>Kansas Climate Division Summary</th>
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1. Departure from 1981-2010 normal value
2. State Highest temperature: 102 degrees F at Hill City on the 26th.
4. Greatest 24hr rainfall: 4.10 inches at Overland Park on the 7th; 2.67 at Oswego on the 7th

Source: KSU Weather Data Library

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5. Comparative Vegetation Condition Report: May 15 – 28

K-State’s Ecology and Agriculture Spatial Analysis Laboratory (EASAL) produces weekly Vegetation Condition Report maps. These maps can be a valuable tool for making crop selection and marketing decisions.

Two short videos of Dr. Kevin Price explaining the development of these maps can be viewed on YouTube at:
http://www.youtube.com/watch?v=CRP3Y5NJggw
http://www.youtube.com/watch?v=tUdOK94efxc

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 21-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 maps below show the current vegetation conditions in Kansas, the Corn Belt, and the continental U.S, with comments from Mary Knapp, state climatologist:
Map 1. The Vegetation Condition Report for Kansas for May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that NDVI values are low in western Kansas, but continue to be high in eastern Kansas. Greater rooting depth of vegetation in the eastern third of the state has provided some buffer from the much-below-normal rainfall seen in May.
Map 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that western Kansas has much greater biomass productivity than last year during this two-week composite period. Even with drier conditions in May, the winter moisture has biomass productivity levels above last year at this time. In contrast, rainfall totals are much behind last year in the North Central Division, and that deficit is showing in lower photosynthetic activity. Low river levels are seen along the Smoky Hill and Saline rivers in central Kansas.
Map 3. Compared to the 23-year average at this time for Kansas, this year’s Vegetation Condition Report for May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that southwest Kansas and the Flint Hills region have slightly above-average NDVI values. In the Central divisions, early maturity of the wheat and the extreme shortage of rainfall in May have resulted in below-normal NDVI readings for this two-week composite period.
Map 4. The Vegetation Condition Report for the Corn Belt for May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that crop conditions have not improved greatly. In Illinois, 97 percent of the corn has emerged, as has 78 percent of the soybeans. Severe drought conditions persist in the Boot Heel of Missouri, and are beginning to expand in western Kansas.
Map 5. The comparison to last year in the Corn Belt for the period May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that photosynthetic activity is above last year’s level in the western and northern portions of the region. In Illinois, for example, soybeans are 78 percent emerged, compared to 25 percent last year at this time.
Map 6. Compared to the 23-year average at this time for the Corn Belt, this year’s Vegetation Condition Report for May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows in western Kansas, the dry May is beginning to take its toll. Also, winter wheat is well ahead of normal development. Wheat harvest in some counties is 33 percent complete. This is the earliest start to wheat harvest since records began in 1952.
Map 7. The Vegetation Condition Report for the U.S. for May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that NDVI values are high for much of the eastern third of the country. Of note are the values in the Mountain West, where the rapidly melting snow cover has increased photosynthetic activity in the region. In contrast, low photosynthetic activity is seen along the mid-Mississippi River Valley, where drought conditions are hampering crop development. Low values in much of Iowa, Illinois, Indiana, and Ohio are the result of field preparation. Crop conditions in Iowa are reported to be mainly good to excellent.
Map 8. The U.S. comparison to last year at this time for the period May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the northern and western regions show the continued impact of the mild winter, with higher NDVI values. Parts of southeastern Colorado into the Texas Panhandle are also showing high levels of photosynthetic activity. In contrast, the Southeastern U.S. shows low photosynthetic activity, as below-average moisture continues in the region.
Map 9. The U.S. comparison to the 23-year average for the period May 15 – 28 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that in central Kansas, Oklahoma, and north Texas the early wheat harvest has resulted in below-average NDVI values for this two-week composite period.

Note to readers: The maps above represent a subset of the maps available from the EASAL group. If you’d like digital copies of the entire map series please contact us at kpprice@ksu.edu and we can place you on our email list to receive the entire dataset each week as they are produced. The maps are normally first available on Wednesday of each week, unless there is a delay in the posting of the data by EROS Data Center where we obtain the raw data used to make the maps. These maps are provided for free as a service of the Department of Agronomy and K-State Research and Extension.

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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 Jim Shroyer, Research and Extension Crop Production Specialist and State Extension Agronomy Leader 785-532-0397 jshroyer@ksu.edu