Issue 918

K-STATE Research and Extension

## Extension Agronomy

# eUpdate

*08/04/2022*

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy eUpdate 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 Dalas Peterson, Extension Agronomy State Leader and Weed Management Specialist 785-532-0405 dpeterso@ksu.edu.

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## eUpdate Table of Contents | 08/04/2022 | Issue 918

## 1. Allow time for lime applications when planting alfalfa this fall

Correcting acidic soil conditions through the application of lime can have a significant impact on crop yields, especially for alfalfa. Acidic soils can significantly reduce nodule establishment and activity in alfalfa, affecting nitrogen status and overall nutrient and water uptake (Figure 1). Since seeding alfalfa is expensive and a stand is expected to last for several years, getting lime applied and acidity corrected before seeding is critical. Liming is one of the most essential, but often overlooked, management decisions a producer can make for alfalfa production.

Unfortunately, lime is not always available in close proximity to where it may be needed. In many cases, trucking and spreading costs may be more than the cost of the lime itself. Lime quality can also vary widely and no one wants to apply more than is necessary. To make the best decisions on how much and what kind of lime to apply, it is useful to know how lime recommendations are made.

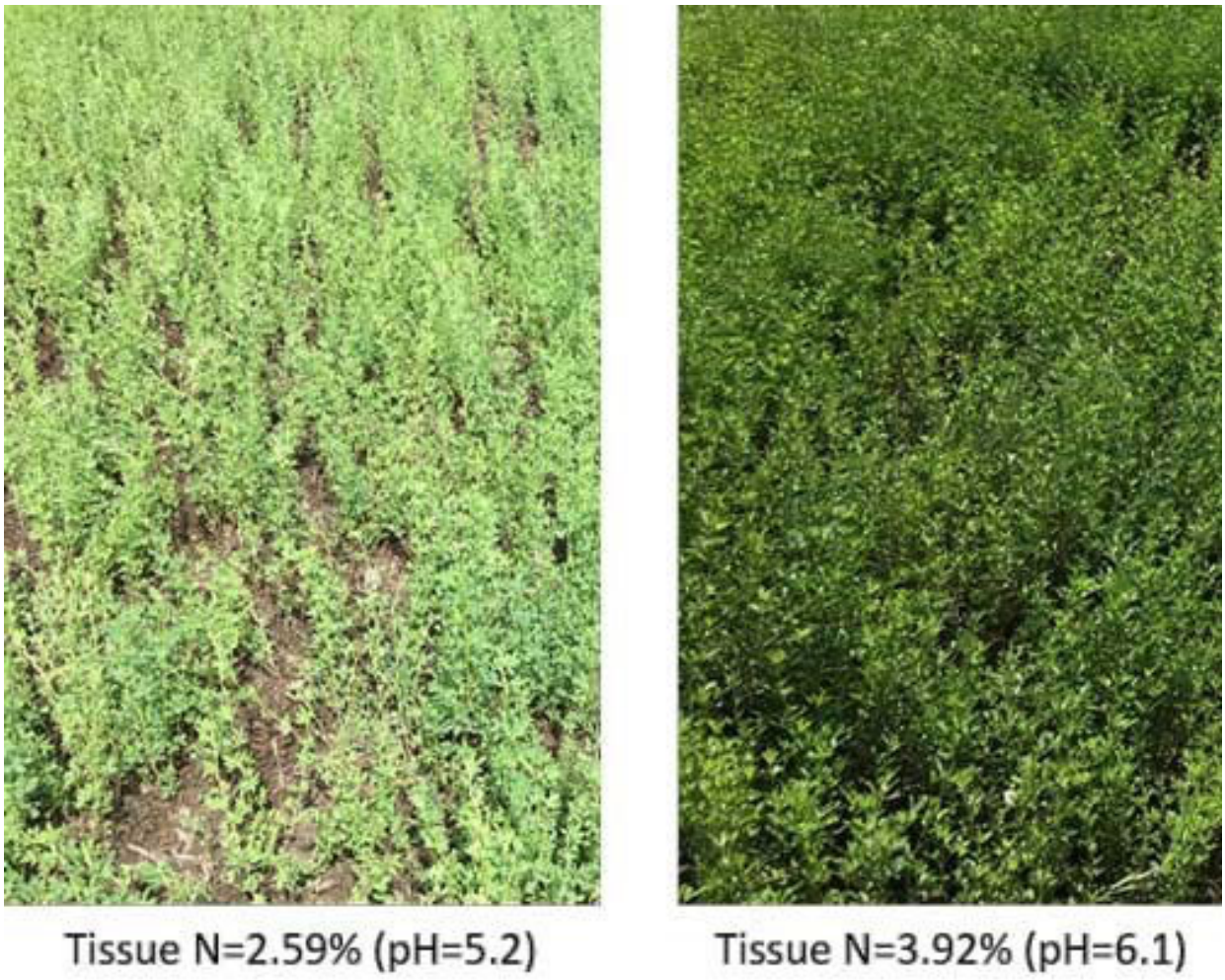


**Figure 1. Soil pH affects nodule formation and activity for N fixation in alfalfa, in addition to nutrient availability and uptake. Photo by Dorivar Ruiz Diaz, K-State Research and Extension.**

**K-State lime recommendations**

A routine soil test will measure the pH of the soil, and this will determine whether lime is needed on the field. Generally, east of the Flint Hills, lime is recommended for alfalfa if the pH drops below 6.4, with a target pH for liming of 6.8. In the Flint Hills and west, lime is recommended for alfalfa and all other crops when the pH drops below 5.8, with a target pH of 6.0. The target pH is simply the pH goal once the lime reacts with the soil.

Why is the target pH different for the two areas of Kansas?

The target pH values differ because of the pH of the subsoil. East of the Flint Hills, especially south of the Kansas River, the subsoil tends to be more acidic. A higher target pH is used to assure adequate pH conditions in the root zone, and provide sufficient amounts of calcium and magnesium. From the Flint Hills and west, most soils have high pH (basic) subsoils that can provide calcium and magnesium to meet crop needs.

Determining the soil pH is the first step in determining if lime is needed. However, it does not tell you the amount of lime you need to apply. Soils with more clay and organic matter will have more acidity at a given pH, and will require more lime/ECC (effective calcium carbonate) to reach a target soil pH than will a sandy soil. This is why two soils may have the same soil pH but have different lime requirements.

**Calculating lime rates**

Lime rates are given in pounds of effective calcium carbonate (ECC) per acre. How does that relate to agricultural lime and how much lime to apply? Lime materials can vary widely in their neutralizing power. All lime materials sold in Kansas must guarantee their ECC content and dealers are subject to inspection by the Kansas Department of Agriculture.

The two factors that influence the neutralizing value of aglime are the chemical neutralizing value of the lime material relative to pure calcium carbonate, and the fineness of crushing, or particle size, of the product. The finer the lime is ground, the greater the surface area of the product, the faster it will react, and the faster the acid neutralization will occur. These two factors are used in the determination of ECC. Expressing recommendations as pounds of ECC allows fine-tuning of rates for variation in lime sources, and avoids under- or over-applying lime products.

**Lime sources**

Research has clearly shown that a pound of ECC from agricultural lime, pelletized lime, water treatment plant sludge, fluid lime, or other sources is equal in neutralizing soil acidity. Therefore, under most circumstances, the cost per pound of ECC applied to your field should be a primary factor in source selection. Other factors such as rate of reaction (fineness), uniformity of spreading, and availability should be considered, but the final pH change, and subsequent alfalfa growth, will depend on the amount of ECC applied.

**Application methods**

All lime sources have a very limited solubility. When planting alfalfa, the best performance occurs when lime is incorporated and given time to react with and neutralize the acidity in the soil. When surface-applied and not incorporated, as in no-till systems, the reaction of lime is generally limited to only neutralizing the acidity and raising the pH in the top 2 to 3 inches of soil. Surface applications

are sufficient in slightly acidic soils, but may not provide as good a soil environment for nodulation and nitrogen fixation in the extremely acid soils.

In no-till or reduced-till systems, where no incorporation of lime is planned, lower rates of lime application are normally recommended to avoid over-liming and raising the pH higher than needed in the surface 2-3 inches of soil. Over-liming can also reduce the availability of micronutrients such as zinc, iron, and manganese, and trigger deficiencies in some soils. Current K-State lime recommendations suggest that "traditional" rates designed for incorporation and mixing with the top 6 inches of soil should be reduced by 50 percent when surface-applied in no-till systems, or when applied to existing grass or alfalfa stands.

What about the calcium and magnesium contents?

Most agricultural limes found in Kansas contain both calcium and magnesium, with calcium exceeding magnesium. The exact ratio of these two essential plant nutrients will vary widely. Dolomitic lime (magnesium-containing) and calcitic lime (low-magnesium, high-calcium) provide similar benefits for most Kansas soils.

For more information, see K-State publication *Soil Test Interpretations and Fertilizer Recommendations*, MF-2586: http://www.bookstore.ksre.ksu.edu/pubs/MF2586.pdf

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## 2. Corn harvest efficiency - Get the most from your crop

This year has been a challenging year for crop production, especially corn, with above-average temperatures and below-average rainfall. Some fields will have a very limited yield, but regardless of the reduced yield, we need to be prepared to minimize yield losses that can occur during harvest operations.

**Figure 1. Corn that was planted in early April has a good stand, with silking beginning in**

**early/mid-June in southeast Kansas. Photo taken on June 23, 2022, by Bruno Pedreira, K-State Research and Extension.**

Harvest inefficiency reduces overall yield and can cause future problems because of volunteer corn (Figure 2). Volunteer corn may have some value by increasing the soil organic matter, providing cover to reduce soil erosion, or providing potential forage for grazing livestock. However, volunteer corn may cause problems for wheat planting after corn harvest, or in a wheat-corn-fallow cropping system by using valuable soil moisture and nutrients needed to promote fall tillering in wheat. Volunteer corn can also provide a "green bridge" of vegetation for insects that can carry viral diseases in wheat.


**Figure 2. Extremely thick stand of volunteer corn resulting from grain lost during harvest operations. Photo by Gretchen Sassenrath, K-State Research and Extension.**

Several factors may contribute to poor harvest efficiency in corn. Most of the kernel loss that occurs at harvest time is due to mechanical limitations with combine settings. A combine performs three major actions during the harvest operation: picking, threshing, and cleaning. Grain loss can occur at each of these stages. A detailed description of harvesting efficiency can be found in the KSRE publication "Corn Production Handbook" beginning on page 36. The Handbook is available online at

https://www.bookstore.ksre.ksu.edu/pubs/c560.pdf. A detailed article on reducing grain loss with proper combine settings will be in next week's eUpdate.

**Estimating yield loss**

Yield loss estimates are made by counting the number of kernels per square foot and dividing by 2 (Figure 3). The number of kernels per square foot is approximately twice the bushels per acre lost. To estimate the yield loss, count the number of kernels in a square foot, and divide by 2 (or multiple by 0.5). For example, a count of 20 kernels per square foot would indicate 10 bu/acre lost during harvest.

While it may be time-consuming to count kernels over a large area, it is important to get a good estimate of yield loss by counting kernels and ears from several locations in the field, and also including both header and thresher losses. Changes can then be made in the harvest operation and to the combine to improve the harvest efficiency. It is also important to check for field losses at different times of the day when harvesting and on different fields. Changes in weather conditions (moisture and temperature) or other factors may impact harvest efficiency.

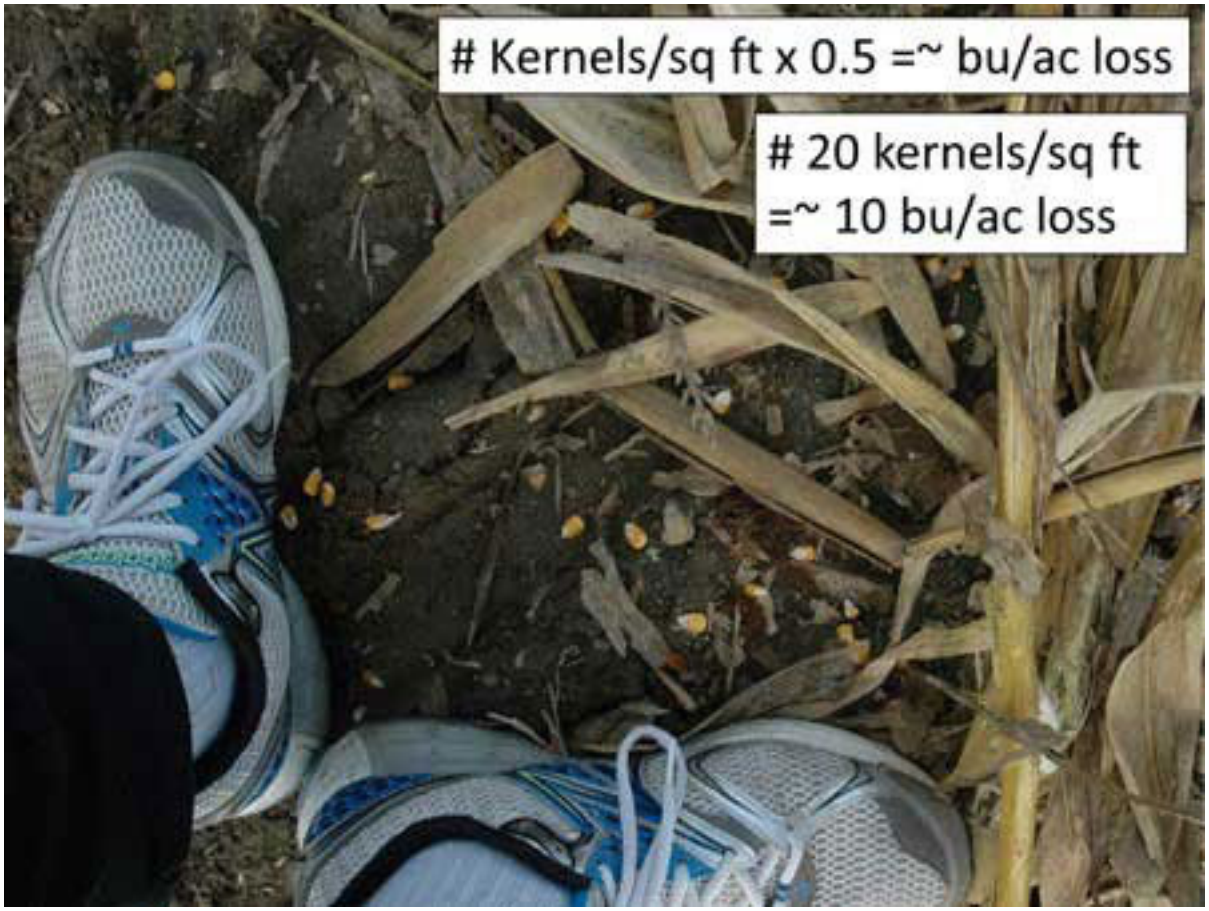


**Figure 3. Estimate corn loss during harvesting by counting the number of kernels in a square-foot area. The number of kernels per square foot is approximately twice the number of bushels per acre lost. Count the number of kernels and divide by two – this is the bushel/acre yield loss. Several areas in a field should be checked. Photo by Gretchen Sassenrath, K-State Research and Extension.**

While harvest efficiency will never be 100% and it is important to complete the harvest in a timely fashion, paying attention to details during harvest can increase profitability. A normal harvest loss rate to aim for is 1 to 2%. Careful attention to equipment, harvest conditions, and harvest operations can minimize yield losses at harvest time and put more corn in the bin.

There is a free mobile app from Ag PhD available to estimate harvest losses based on the kernel count per square foot. The download link is here: iOS. The app allows the user to select the crop and input the number of seed or kernels counted from an area on the ground. Harvest loss is calculated from this count.

Additional information is available in the KSRE publication "Corn Production Handbook" (https://www.bookstore.ksre.ksu.edu/pubs/c560.pdf).

Stay tuned to the eUpdate next week. We will discuss how to reduce grain loss by having the proper combine settings.

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## 3. Saving wheat seed - Be aware of the regulations

Throughout the ages, farmers have planted seed saved from their previous crop. They selected the best quality seed of the highest yielding varieties. It was just common sense.

With the advent of hybrid crops like corn, farmers discovered that they did not get the advantage of hybrid vigor when they saved their seed and the ensuing crop was not uniform. They quickly learned they needed to buy new seed each year of these hybrid crops. This annual purchase of hybrid seed commercialized the corn seed business and resulted in enormous investment into research and development of improved corn hybrids. Consequently, technology in corn has benefitted farmers. It just didn't make sense to save your corn seed any more.

With the passing of the US Plant Variety Protection Act (PVPA) in 1970, congress encouraged the private investment into development of new plant varieties. An important component of this act was the farmer's right to save seed. Section 113 of the act states,

*…it shall not infringe any right hereunder for a person to save seed produced by the person from seed obtained, or descended from seed obtained, by authority of the owner of the variety for seeding purposes and use such saved seed in the production of a crop for use on the farm of the person…*

Simply stated, if a farmer purchases Certified seed he may keep seed grown from that seed for planting on his farm. However, if a farmer buys non-certified seed of a PVPA protected variety from someone else, it is likely that not only is the purchase of that seed in violation of the Act, but saving seed of subsequent production is also a violation.

The most recent restrictions to saving seed are those imposed by patented traits and sales contracts. In most cases, farmers are prohibited by patent laws from saving seed of varieties with patented traits like Clearfield® an CoAxium® in wheat. This is usually reinforced through a contract that is signed at the point of purchase. Even if traits are not patented, saving seed may be prohibited as part of the sales contract.

The consequences of planting illegal seed can be substantial. The owner of the variety could go as far as filing a lawsuit asking for the destruction of the crop. There could also be monetary awards and attorney fees. If state or federal officials get involved, fines could range from $125-$1,000 per occurrence.

Ignorance of the law is no excuse. As a best management practice, farmers should know what variety they are planting. If they can't show that they purchased Certified, they will need to investigate further before they save any production for planting. If they did purchase Certified seed, they should read the label and sales contracts to see if there are any restrictions on saving seed.

With the recent private investment and inclusion of proprietary genetic traits into wheat variety development, it is going to be less likely a farmer will be able to save and replant his own seed in the future. On the bright side, the value that seed certification brings to seed wheat performance and convenience along with the improvements in yield and quality offered by new varieties will make saving your own seed an economically unattractive choice.

**This article was written by Daryl Strouts, KS Wheat Alliance. It was first published in the December 2010*

*"Wheat Farmer" newsletter. It was updated for 2022. – Kathy Gehl, eUpdate editor*

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## 4. First report of sugarcane aphid on grain sorghum in Kansas

Sorghum aphids (*Melanaphis sorghi*), previously called sugarcane aphids (*Melanaphis sacchari*), have been reported in two counties in Kansas (Sedgwick and Pottawatomie). These counties are highlighted in green in Figure 1. While not shown on the map, a report from Ellsworth County was received on Thursday afternoon (Figure 2). Grain sorghum producers in Kansas should be scouting their fields on a routine basis.

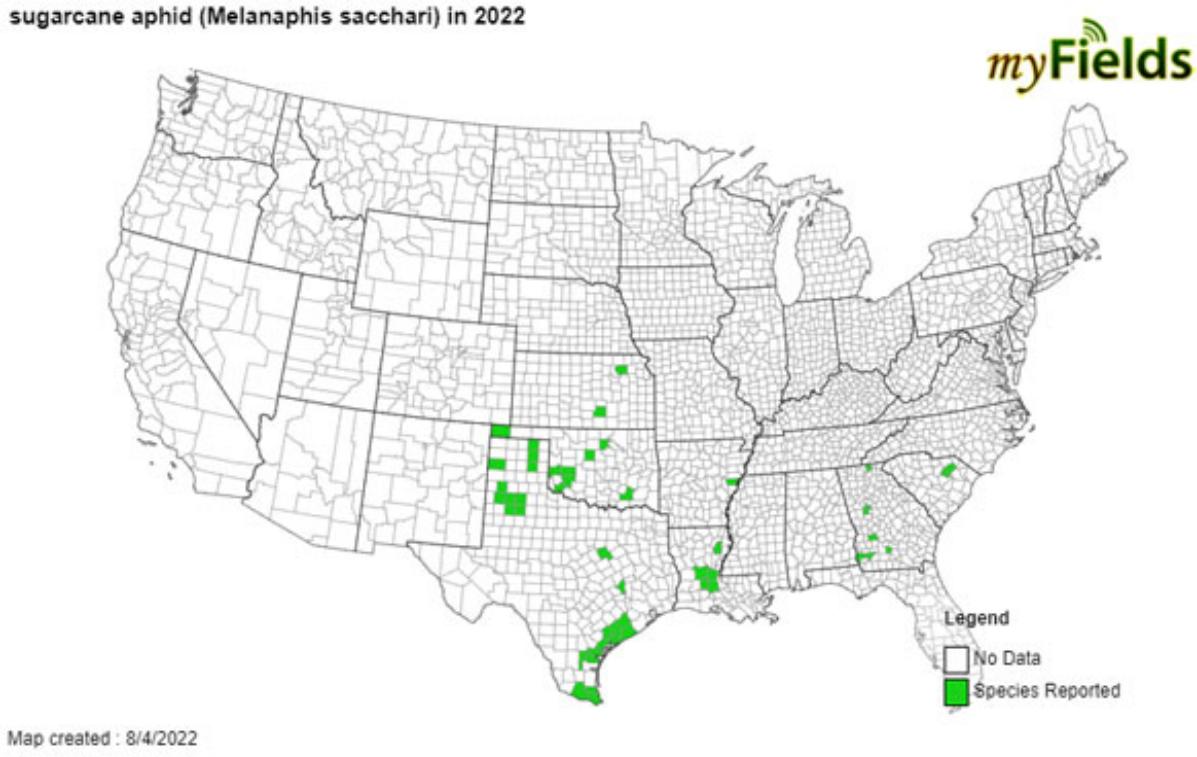


**Figure 1. Current status of the SCA (now called sorghum aphid). The map indicates only the counties in which the SCA has been found, and does not indicate how many or how few aphids were found in that county. Source: [https://www.myfields.info/pests/sugarcane-aphid](https://www.myfields.info/pests/sugarcane-aphid)**

**Figure 2. Sorghum aphids (formerly called sugarcane aphids) in a sorghum field in Ellsworth County, Kansas. Photo by Craig Dinkel, K-State Research and Extension.**

**Scouting time for SCA**

Early detection is key to the management of this pest, but treatments should be based on established thresholds. One heavily infested plant does not equal a yield loss. Applying insecticides too soon can result in repeated applications.

Plants are vulnerable to infestation by SCA at any growth stage, but Kansas sorghum is most at risk from boot stage onward. The ability of sugarcane aphid to overwinter on Johnsongrass and re-sprouting sorghum stubble represents challenges to the management of this pest in more southerly regions.

Issues arising from SCA in Kansas are likely to become increasingly uncommon with each passing

year. It is best practice to scout late-planted fields, as these are more susceptible to yield loss and aphids and this a bigger window for aphids to build to damaging levels later in the season.

**Sampling method**

- Once a week, walk 25 feet into the field and examine plants along 50 feet of row:
- If honeydew is present, look for SCA on the underside of a leaf above the honeydew.
- Inspect the underside of leaves from the upper and lower canopy from 15–20 plants per location.
- Sample each side of the field as well as sites near Johnsongrass and tall mutant plants.
- Check at least 4 locations per field for a total 4 locations per field for a total of 60-80 plants.

If no SCA are present, or only a few wingless/winged aphids are on upper leaves, repeat this sampling method once a week thereafter.

If SCA are found on lower or mid-canopy leaves, begin twice-a-week scouting. Use the same sampling method, but be sure to include % plants with honeydew. Estimate the % of infested plants with large amounts of SCA honeydew (shiny, sticky substance on leaf surface) to help time foliar insecticides for SCA control on sorghum (Table 1).

**Table 1. SCA Thresholds**

| **Growth Stage** | **Threshold** |
|---|---|
| Pre-Boot | 20% plants infested with localized area of heavy honeydew and established aphid colonies |
| Boot | 20% plants infested with localized area of heavy honeydew and established aphid colonies |
| Soft dough | 30% plants infested with localized area of heavy honeydew and established aphid colonies |
| Dough | 30% plants infested with localized area of heavy honeydew and established aphid colonies |
| Black Layer | Heavy honeydew and established aphid colonies in head *only treat to prevent harvest problems **observe pre-harvest intervals |

You can download a free sugarcane aphid scouting guide here: https://www.myfields.info/sites/default/files/page/ScoutCard%20KSU%20v05312017.pdf

For ongoing current information on the sorghum aphid in Kansas, check out the myFields web site often in the coming weeks and months: https://www.myfields.info/pests/sugarcane-aphid

**Please email R. Max Dunlap (xammax@ksu.edu) with counties to add to the map!!**

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## 5. Scout for headworms in sorghum from flowering into milk stage

Relatively new, cost effective, and environmentally friendly products are available for controlling headworms in sorghum. These are pest-specific viruses, formulated as biological pesticides, that can be applied the same as any foliar insecticide, or delivered via overhead irrigation sprinklers. However, application must be made early in the infestation, while the majority of larvae are still small. These products should not be used as rescue treatments, but an early application will ensure infections propagate naturally throughout the field and that reapplication will not be required.

Sold under the brand names Heligen® (for corn earworm) or Fawligen® (for fall armyworm), these products are highly specific, killing only the target pest, sparing beneficial insects, and using other insects as vectors to create a local 'epizootic' of disease in the field. Thus, there is no environmental impact of treating below threshold (conventionally one or more worms per head), and it is valid to use these products as a relatively low-cost insurance policy, especially in a year when earlier planted sorghum in the south is already experiencing fall armyworm damage.

Farmers should be aware that many of the generic pesticides that might appear attractive on the basis of low cost are now much less effective against these pests, due to their repeated exposure to the same modes of action on many different crops over the years. In contrast, there are no known cases of pests evolving resistance to a virus, and unlike fungal pathogens, virus infections do not require humidity or leaf wetness. However, the product must be consumed by the pest, and larvae take up to a week to die, depending on temperature, but will stop feeding 48-72 hours post-ingestion. These virus formulations are also compatible with tank mixes of other materials, provided the pH is held below 8.0, and combinations of both products are available if both species of headworms are present.

More information is available from the supplier: https://www.agbitech.us/

**Control alternatives for post-threshold treatment**

Rescue treatments include Blackhawk (a.i. = spinosad) and Prevathon (a.i. = rynaxypyr), both of which are also reasonably selective for beneficial species. Please refer to the current version of the Sorghum Insect Pest Management Guide for rates and safety information:
https://bookstore.ksre.ksu.edu/pubs/MF742.pdf

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## 6. Have problems with Sudden Death Syndrome in soybeans?

Researchers at K-State are in search of soybean fields showing symptoms of Sudden Death Syndrome (SDS) to sample.

**What is Sudden Death Syndrome (SDS)?**

It is a soil-borne fungal disease caused by *Fusarium virguliforme*. Infection and colonization begin shortly after planting and the pathogen produces a toxin that causes above-ground symptoms later in season.

**What are the symptoms?**

Root symptoms include necrosis (death) and above-ground symptoms include interveinal leaf chlorosis (yellow discoloration of the tissue) and necrosis (Figure 1). Under the right environmental conditions, these symptoms appear as early as the start of flowering.

**Figure 1. Sudden Death Syndrome foliar symptoms. Photos by Rodrigo Onofre, K-State Research and Extension.**

**What are the environmental conditions?**

SDS is observed more when soybeans are planted in cool, wet soils followed by wet conditions at the beginning of flowering.

**What are the management options?**

Seed treatment, resistant cultivars, planting date, tillage, and crop rotation.

If you are willing to participate in this study or know of someone willing to participate, please contact us via the emails listed below.

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## 7. Understanding the drought declaration process

As drought continues to have a substantial impact on Kansas this summer, many people are questioning their location's drought status. We will briefly discuss how those drought declaration decisions are made and how you can provide additional feedback/input that help the weekly decisions better reflect on the ground decisions.

**Drought Declaration Decisions**

Each week, scientists across the nation gather input on drought conditions across their respective regions. Typically, each state has a representation who collects his/her state's information and passes it up the chain to the National Drought Monitor author each week. Information comes from numerous sources that all reflect current and recent historical data. No information on the upcoming forecast is considered. The Drought Monitor is meant to reflect current conditions and how they have changed over the previous week.

Some of the weekly input data sources include:

- **Standard Precipitation Index** (https://hprcc.unl.edu/maps.php?maps=ACISClimateMaps). This puts climatological perspective to observed moisture and suggests varying deficits/surpluses as a result. The data, similar to many of these data input sources, are available for varying periods of time from 30 days to over a year (Figure 1).

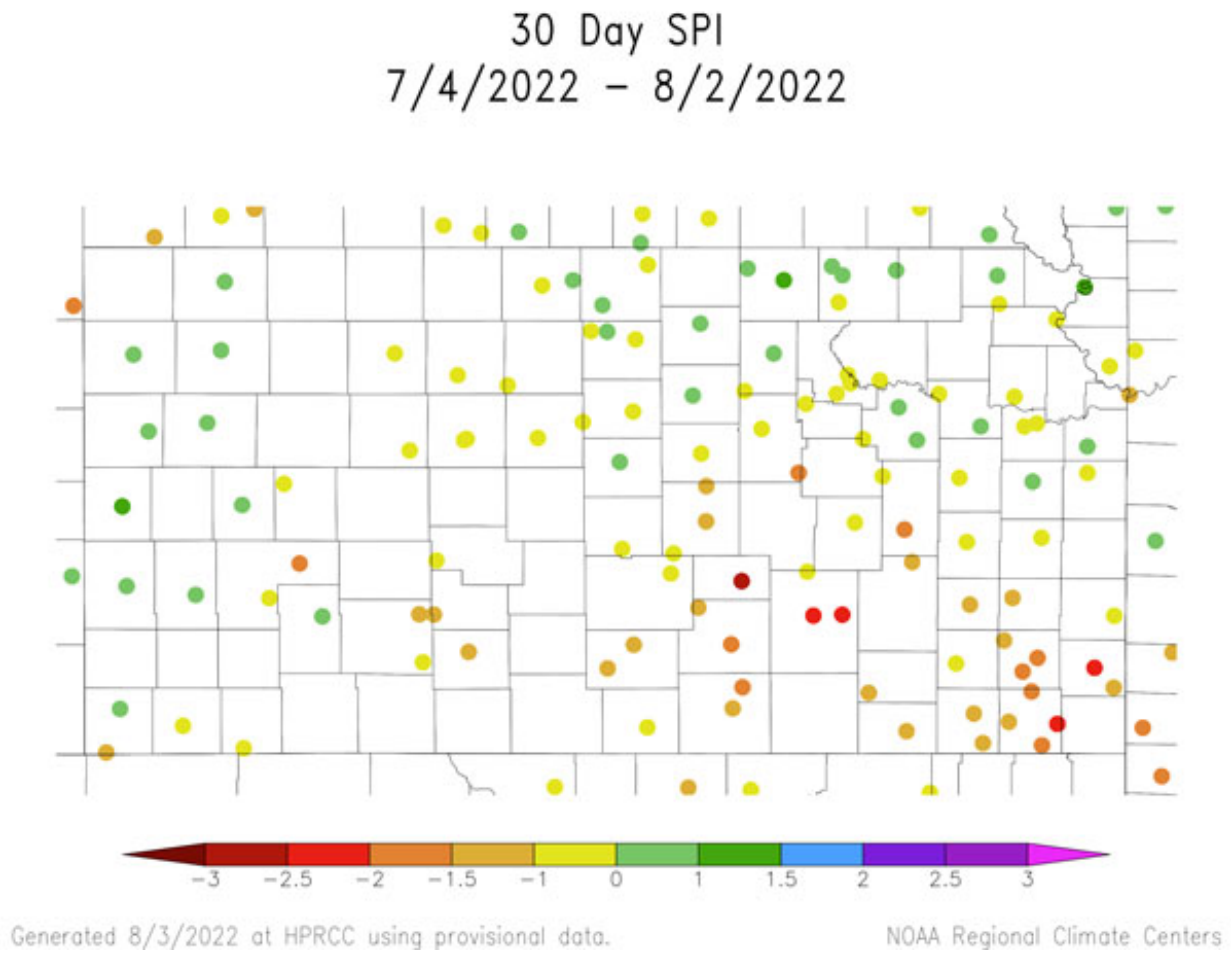


**Figure 1. Standard Precipitation Index as viewed by individual climate stations from the High Plains Regional Climate Center.**

- **Evaporative Drought Demand Index** (https://psl.noaa.gov/eddi/). This considers additional inputs, such as wind, that can enhance moisture demands across the region. Especially during the summer, periods of increased wind, combined with hot/dry conditions, can result in rapid evaporation of surface moisture. Increased demand results in additional drought stress. This is updated weekly, but archived data allows for analysis over longer periods of time to consider long-term drought conditions.
- **Community Collaborative Rain, Hail and Snow Network (CoCoRaHS)** (https://maps.cocorahs.org/). This is a citizen science program that allows the general public to report precipitation in their backyard. The SPI previously only considered climate stations with a thorough history of 30 or more years. These public observers fill in the big data gaps that exist between the climate stations. Most importantly, reports of zero moisture observed help drought monitor authors decide that a particular location didn't receive moisture and is increasingly dry as a result. Last month, 836 observers across Kansas submitted daily precipitation reports, but there are multiple counties with no reporters. We need more help! You can sign up (and receive a free rain gauge if you promise to report) at http://www.cocorahs.org. You can also view others reports and compare your observations to those from neighboring towns and counties.

- **Soil moisture** (https://mesonet.ksu.edu/agriculture/soilmoist). Surface soil conditions are critical in determining both moisture availability for plants and moisture demands. Kansas is fortunate enough to have freely available soil moisture that can be viewed both in real-time and with changes from the last seven days to a year. Rapid drops in moisture are monitored as are "flat-lining trends." Flat-line trends are when soil moisture stops dropping with time and are essentially the lowest possible for that particular location and soil type.

**Making an Impact on Drought Declarations**

In addition to the previously mentioned data tools, there is an additional avenue for YOU to report drought impacts for your particular region. Anyone (public, producer, researcher or agency) can also submit **Condition Monitoring Observer Reports** (CMOR). These reports are easy to make and can reflect the **current** 'on-the-ground' results of the conditions. Even in times of increased moisture, reports help justify conditions in the locale that meteorological data may not reflect. These allow you to report crop stress, livestock impacts, household concerns, surface water conditions and even municipality water supply concerns. It is available in a free, easy to use interface. You can submit reports here: http://go.unl.edu/CMOR and view other's reports here: http://go.unl.edu/CMORMAP (Figure 2).

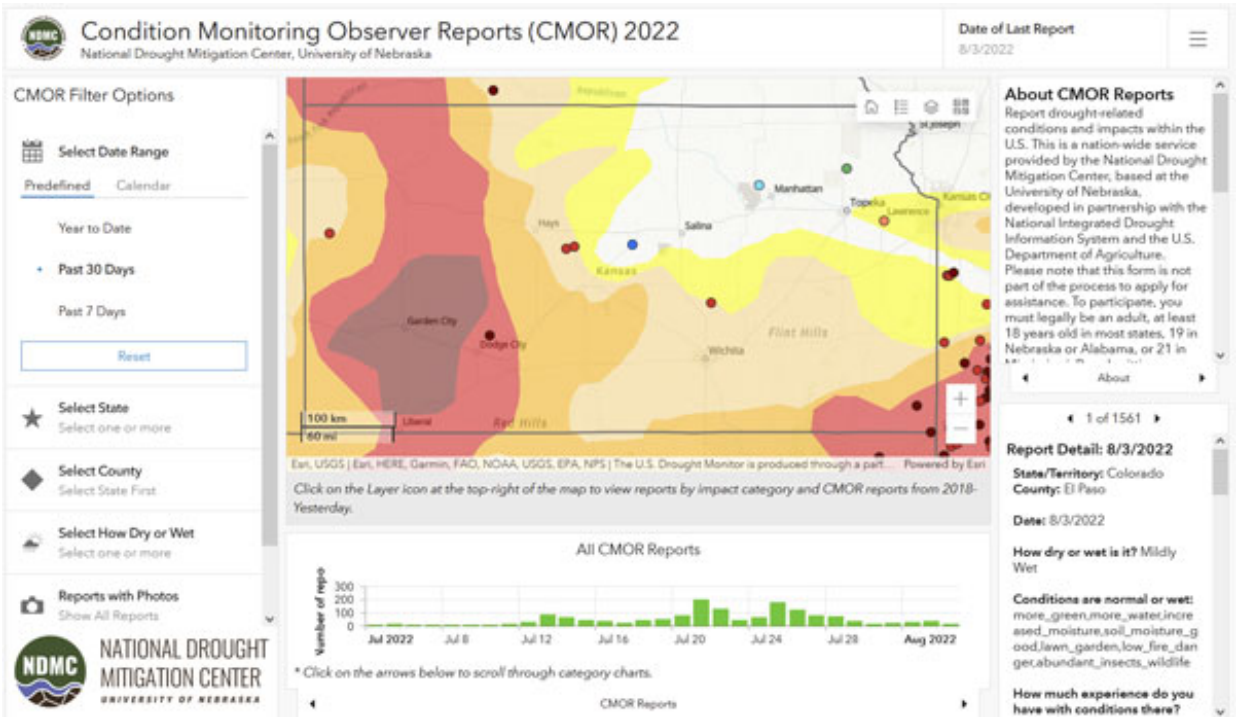


**Figure 2. The last 30 days of CMOR reports in Kansas (Source: http://go.unl.edu/CMORMAP).**

The resulting data are available to the general public and more importantly, all drought decision makers in the nation. This is the quickest, easiest, and most convenient way to relay how the current drought (or rainfall) has impacted you. These can have substantial impacts on the drought monitor assessment for your locale and provide invaluable data for future research/analysis of water and/or

climate status.

The next time you are concerned about your current drought (or wet) conditions, please make a drought report using the CMOR application and provide us your input!

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## 8. How hot has it been in Kansas this summer?

July is typically the hottest month in Kansas, and this year has been no exception. Statewide, the average temperature (degrees F) for July 2022 was 80.8°, or 2.0° above normal. This July ranks as the 29th warmest on record, dating back to 1895. June 2022 was above normal as well, ranking as 34th warmest.

Many locations in Kansas have dealt with bouts of extreme heat this summer, often as long stretches of high temperatures lasting for weeks. The COOP observer in Ashland (Clark County) has reported 30 days of highs at or above 100° (we will term this "100° days" in this report, with references to other thresholds similarly phrased) this year as of July 31. The Kansas Mesonet site at Meade recorded 30 consecutive 90° days, from June 30 to July 29. Have there been more hot days than normal this year in Kansas? Let's take a closer look.

**Summer temperatures at 40 locations in Kansas**

The data in this report are based on the period 1991-2020. For each of 40 locations across the state, the total number of days with high temperatures at or exceeding four different temperature thresholds (90°, 95°, 100° and 105°) during this 30-year period was determined, then averaged to obtain annual counts (Table 1). Next to the averages are this year's counts through July 31 for the same four thresholds.

As of July 31, none of the 40 locations have exceeded their average annual number of 90° days, but Chanute has tied their average with 49. At first glance, this might suggest that the heat this year hasn't been all that unusual. However, at the higher temperature thresholds, evidence that 2022 has been unusually hot becomes clearer. Fourteen of the 40 stations have already exceeded their average number of 95° days. Over 70% of the stations (29 of 40) are above their annual average number of 100° days, and just over half (23 of 40) are above their annual average of 105° days. The only part of Kansas where none of the average counts have been exceeded is in the northeast. For places where the hottest temperature threshold counts are already above annual averages, another month or more of hot days will push those counts even higher. Most locations in Kansas typically see at least half of their daily highs in August reach at least 90° (Table 2). There is a better than even chance of above-normal temperatures in August according to the Climate Prediction Center (Figure 1), so we will certainly add to this year's totals in the next few weeks before cooler temperatures prevail. Additionally, locations with below-normal counts still have plenty of time to catch up.

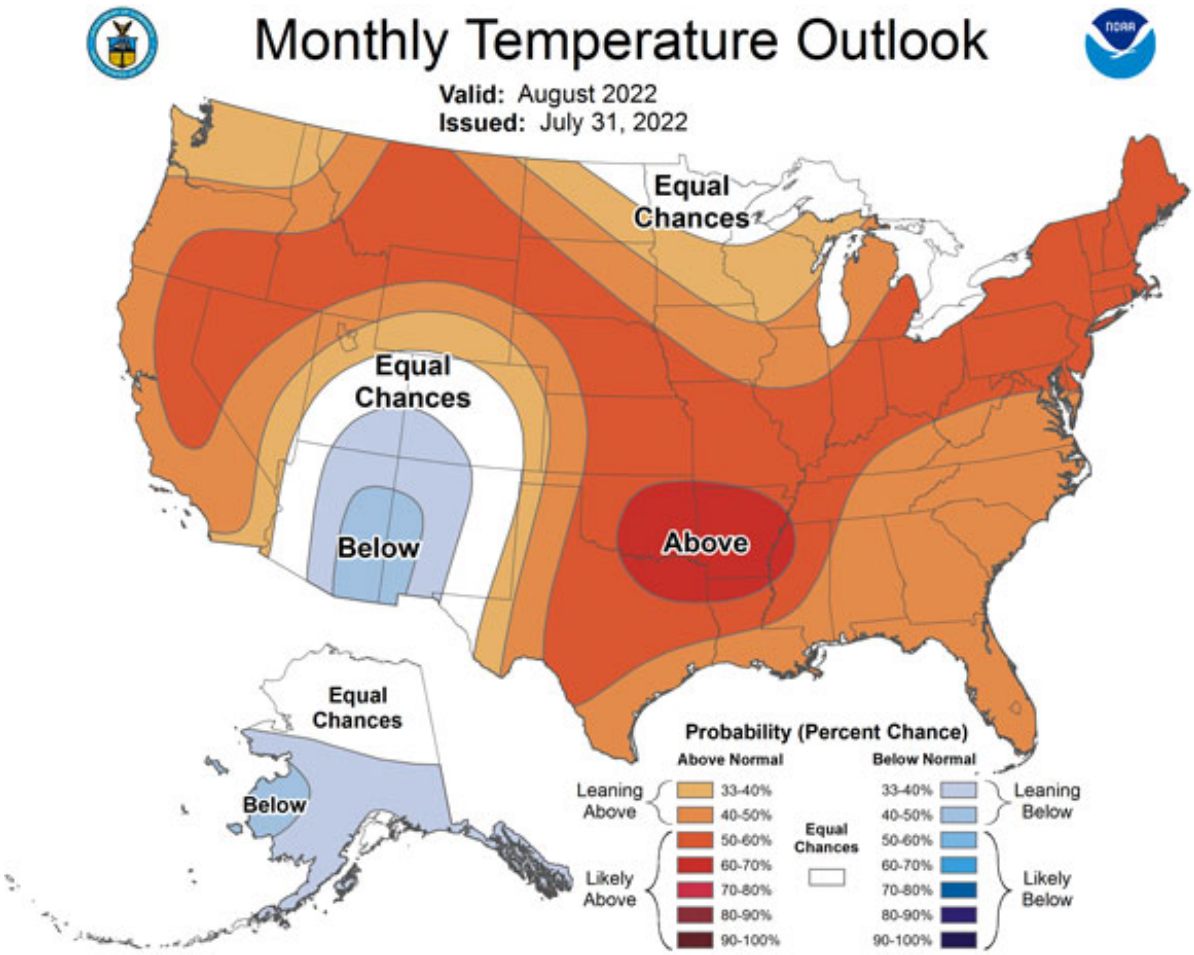


**Figure 1. NOAA's Climate Prediction Center temperature outlook for August 2022.**

**Record-breaking heat?**

Some superlative statistics of note: Healy's 17 days at or above 105° so far in 2022 already ranks as their 5th highest count on record, dating back to 1901. The most 105° days on record there in a calendar year is 26 days during the Dust Bowl era, in 1934. Dodge City's 105° days count of 7 is tied for 5th all time, dating back to 1943. Dodge City's top two years for 105° days, 2011 (26) and 1980 (20), are unlikely to be matched, but a top 5 ranking is still noteworthy, especially when the only years ahead of 2022's counts are legendary in Kansas climate history for excessive heat. Only time will tell if 2022 ends up ranking as high as those infamous years, but we're well on our way to such heights for many locations if the August outlook verifies.

**Table 1. Average number of days per year with high temperatures exceeding various temperature thresholds. BOLD numbers inside red-shaded cells indicate 2022 counts at or above than their corresponding 30-year averages, while blue-shaded cells are below the 30-year averages.**

| | | 30-Year Average (1991-2020) | | | | 2022 Year-to-Date (through July 31) | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Northwest** | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Atwood | Rawlins | 62 | 35 | 14 | 2.4 | 46 | **37** | **24** | **8** |
| Colby | Thomas | 58 | 29 | 9 | 0.9 | 44 | **30** | **18** | **5** |
| Goodland | Sherman | 52 | 25 | 6 | 0.6 | 40 | 30 | **14** | **2** |
| Hill City | Graham | 69 | 41 | 17 | 4.4 | 47 | 35 | 22 | **8** |
| **North Central** | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Clay Center | Clay | 56 | 26 | 8 | 1.4 | 33 | 20 | 4 | 0 |
| Concordia | Cloud | 50 | 23 | 7 | 1.2 | 37 | 21 | **10** | **2** |
| Minneapolis | Ottawa | 69 | 37 | 14 | 4.5 | 46 | 25 | 11 | 2 |
| Smith Center | Smith | 61 | 32 | 12 | 2.7 | 40 | 20 | **14** | **4** |
| Washington | Washington | 55 | 25 | 7 | 0.7 | 29 | 9 | 1 | 0 |
| **Northeast** | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Holton | Jackson | 38 | 13 | 4 | 0.4 | 28 | 9 | 1 | 0 |
| Horton | Brown | 43 | 15 | 4 | 0.3 | 27 | 8 | 0 | 0 |
| Manhattan | Riley | 59 | 28 | 10 | 2.1 | 31 | 13 | 3 | 0 |
| Marysville | Marshall | 45 | 18 | 5 | 0.5 | 27 | 6 | 0 | 0 |
| Wamego | Pottawatomie | 49 | 19 | 6 | 1.0 | 31 | 11 | 1 | 0 |
| **West Central** | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Healy | Lane | 71 | 40 | 15 | 2.8 | 57 | **40** | **28** | **17** |
| Oakley | Logan | 60 | 33 | 11 | 1.3 | 41 | 30 | **21** | **6** |
| Tribune | Greeley | 65 | 37 | 12 | 1.6 | 40 | 30 | **12** | 1 |
| WaKeeney | Trego | 66 | 37 | 14 | 2.7 | 42 | 27 | **18** | **7** |
| Hays | Ellis | 66 | 36 | 15 | 4.1 | 46 | 27 | **17** | **8** |
| **Central** | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Lincoln | Lincoln | 69 | 38 | 17 | 5.2 | 41 | 23 | **19** | 1 |
| McPherson | McPherson | 64 | 31 | 11 | 2.3 | 44 | **32** | **13** | 1 |
| Russell | Russell | 64 | 34 | 13 | 3.0 | 46 | 26 | **14** | **4** |
| Salina | Saline | 69 | 38 | 16 | 4.4 | 44 | 28 | 11 | 3 |
| **East Central** | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Emporia | Lyon | 44 | 17 | 5 | 0.8 | 41 | **19** | **5** | 0 |
| Garnett | Anderson | 46 | 17 | 4 | 0.5 | 35 | 16 | 0 | 0 |
| Lawrence | Douglas | 43 | 16 | 5 | 0.3 | 39 | **20** | **5** | 0 |
| Topeka | Shawnee | 50 | 20 | 6 | 1.0 | 42 | **20** | **7** | 0 |
| **Southwest** | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Ashland | Clark | 84 | 52 | 23 | 5.8 | 61 | 44 | **30** | **13** |
| Dodge City | Ford | 71 | 38 | 14 | 2.5 | 58 | **41** | **24** | **7** |
| Garden City | Finney | 68 | 35 | 11 | 1.3 | 51 | **37** | **18** | **5** |
| Liberal | Seward | 80 | 47 | 16 | 1.9 | 59 | 45 | **24** | **9** |
| Syracuse | Hamilton | 75 | 42 | 14 | 2.0 | 60 | 40 | **22** | **8** |

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| South Central | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Anthony | Harper | 70 | 36 | 14 | 2.4 | 50 | **36** | **15** | **3** |
| Hutchinson | Reno | 63 | 31 | 11 | 2.5 | 56 | **37** | **17** | **3** |
| Pratt | Pratt | 65 | 34 | 13 | 2.7 | 51 | 33 | **14** | **3** |
| Wichita | Sedgwick | 65 | 32 | 12 | 2.8 | 48 | 28 | **14** | 2 |
| Southeast | | | | | | | | | |
| Town | County | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° | ≥ 90° | ≥ 95° | ≥ 100° | ≥ 105° |
| Chanute | Neosho | 49 | 20 | 5 | 0.8 | **49** | **30** | **13** | **3** |
| Coffeyville | Montgomery | 63 | 28 | 10 | 2.3 | 47 | **32** | **18** | **4** |
| Pittsburg | Crawford | 55 | 21 | 5 | 0.6 | 38 | **25** | **9** | **1** |
| Winfield | Cowley | 65 | 30 | 12 | 2.7 | 50 | 29 | **16** | **4** |

**Table 2. Average number of days with highs greater than or equal to 90°F during the first 7 months of the year (based on 1991-2020 data), the actual counts for the first 7 months of 2022, and the average number of 90° days in the month of August for the same 30-year period.**

| Region | Town | Jan.-Jul. Average | 2022 YTD | August Average |
|---|---|---|---|---|
| Northwest | Goodland | 31 | **40** | 14 |
| North Central | Concordia | 30 | **37** | 13 |
| Northeast | Manhattan | 34 | 31 | 16 |
| West Central | Oakley | 34 | **41** | 15 |
| Central | Salina | 41 | **44** | 18 |
| East Central | Topeka | 29 | **42** | 15 |
| Southwest | Dodge City | 41 | **58** | 19 |
| South Central | Wichita | 38 | **48** | 18 |
| Southeast | Chanute | 27 | **49** | 17 |

**Stay tuned!**

Watch for a future report with final counts for 2022 in the fall. In the meantime, the Kansas Mesonet is a great resource for tracking the heat of summer at over 75 locations across the state. Visit us on the web at http://mesonet.k-state.edu.

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## 9. Kansas Composting Operators' School, Sept. 14-15 in Manhattan

The Kansas Composting Operators' School provides hands-on training in municipal, agricultural, and commercial large-scale composting for operators and managers of compost facilities who want to gain knowledge and experience in composting. The school will take place on September 14-15 at the KSU Agronomy Education Center at the North Agronomy Farm (2200 Kimball Ave) in Manhattan.

The program includes classroom and laboratory instruction along with field activities. Field activities will include a demonstration of composting equipment such as a turner, and collection of compost samples for testing for maturity as well as chemical and physical properties.

Instructors for this year will be DeAnn Presley, K-State Agronomy Department and Emery Wiens, Kansas Department of Health and Environment.

Training topics will include:

- Composting science and methods
- Compost biology
- Compost feedstocks
- Food waste composting
- Determining compost mixes
- Permit and legal requirements
- Site design and maintenance
- Compost equipment
- Windrow construction and aeration
- Compost moisture
- Field and laboratory monitoring
- Learn to measure moisture, temperature, pH, soluble salts, maturity, and interpreting lab data
- Compost quality and use
- Methods of composting: static vs. active

Registration is due by **September 5** and class size is limited to 20 people. The registration fee ($225) will include lunches, breaks, and training materials. Participants are responsible for travel and lodging. Payment (payable to KSU Agronomy) must accompany registration. Mail to: Extension Agronomy, 2014 Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS 66506. Online registration is available for credit card payment (additional fees apply): https://bit.ly/CompostSchool22

DeAnn Presley, Soil Management Specialist
deann@ksu.edu

## 10. Kansas Wheat Rx Schools - August 9 and 10

K-State Research and Extension and the Kansas Wheat Commission are hosting two Wheat Rx Schools in western Kansas. The first event will take place in Phillipsburg, KS, on August 9. The second event will take place in Garden City, KS, on August 10.

Come learn about managing wheat for yield, quality, and sustainability, not only from the perspective of variety selection and management, but also from the industry side.

Details for each school, including registration and agenda, are included below.

August 9 – Phillipsburg, KS

This school will take place at the Armory Large Hall, 520 S. 7th Street, Phillipsburg, KS 67661. Registration for this school is free due to sponsorship by Amber Wave. To register online, please go to: https://kswheat.com/wheat-rx-registration-page

7:30 - 8 am Registration, Breakfast sponsored by Kansas Wheat Alliance

8:00 Welcome and introduction to Wheat Rx - Aaron Harries, Kansas Wheat

8:15 Variety Selection for High Yield and High-Quality Wheat - Allan Fritz, K-State

9:05 Fertility Management for High Yield and High-Quality Wheat - Lucas Haag, K-State

10:00 Intensive Wheat Management to Maximize Yield and Quality - Romulo Lollato, K-State

11:00 Adjourn

11:30 - 2:00 Amber Wave Ribbon Cutting and Reveal of Wheat Protein Plant

Amber Wave, formerly known as Prairie Horizon Agri-Energy, cordially invites you to attend the ribbon cutting and reveal of North America's largest wheat protein plant. The ribbon cutting will take place August 9th from 11:30am to 2:00pm at 1664 E. 100 Road in Phillipsburg. Lunch and refreshments are provided. There will be a tent on site in the event of inclement weather. To RSVP or for any other inquiries, call Kelly Vanderplas at 785-543-6719 or email kvanderplas@amberwaveusa.com.

August 10 – Garden City

This school will take place at the Clarion Inn, 1911 E. Kansas Ave., Garden City, KS 67846. Kansas Association of Wheat Growers members receive one free registration. Non-member registration is $110. To register online, please go to: https://kswheat.com/wheat-rx-registration-page

8:00 am Registration, Breakfast, sponsored by Kansas Wheat Alliance.

9:00 Welcome and Introduction to Wheat Rx - Aaron Harries, Kansas Wheat

9:15 Capturing Value for High Quality Wheat - Grain Craft

10:05 Variety Selection for High Yield and High-Quality Wheat - Allan Fritz, K-state

10:55 Break

11:10 Fertility Management for High Yield and High-Quality Wheat - Brian Arnall, Oklahoma State University

Noon Lunch

1:00 pm Intensive Wheat Management - Romulo Lollato, Kansas State University

2:00 Student Presentations

3:00 Adjourn