Issue 923

K-STATE Research and Extension

Extension Agronomy

eUpdate

09/08/2022

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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1. Alfalfa management: Deciding on last cutting this fall

Alfalfa will quit growing after the first hard freeze (when temperatures reach below 26°F), which in Kansas occurs on average around October 15, but can be as early as October 1 or late as November 1. The decision should be weather-based at this time of the year because the timing of the last two cuttings impacts the winter survival and productivity of the stand in the following year.

The last cutting, prior to fall dormancy, should be made based on expected crown regrowth rather than one-tenth bloom because of the decreasing photoperiod. The last cutting should be made so there will be 8 to 12 inches of foliage, or 4 to 6 weeks of growth time, before the first killing frost. This should allow adequate time for replenishment of root reserves. Which means the second to final cutting should occur around September 1.

At this stage of the growing season, alfalfa plants need to store enough carbohydrates to survive the winter. If root reserves are not replenished adequately before the first killing freeze in the fall, the stand is more susceptible to winter damage than it would be normally. That could result in slower greenup and early growth next spring, and in some cases stand loss due to winter kill. The potential of the alfalfa crop to grow new foliar tissue in the spring is greater with greater root reserves in the fall, thus root reserves this fall are the main driver of next crop's yield and quality. Varieties are continually being selected for winter hardiness so varieties today are less susceptible as varieties of yesterday to winter injury but it is still important to manage varieties for best success. Otherwise spring growth can be reduced and stand loss can occur.

The final cutting should occur right after the first killing freeze, before too many of the leaves have dropped. Producers should be prepared to enter the fields as soon as soil moisture conditions allow. After a killing freeze, the remaining forage (if any) can be hayed safely. However, the producer should act quickly because the leaves will soon drop off.

Figure 1. Alfalfa stand with approximately 12 inches of top growth prior to winter dormancy. The last cut in this stand was performed early September, and this photo was taken late October. This stand will be hayed immediately following the first killing frost. Photo by Romulo Lollato, K-State Research and Extension.

Consider soil sampling alfalfa fields now

Late fall is also a great time of the year to soil sample alfalfa ground. This timing allows for an accurate assessment of available soil nutrients and provides enough time to make nutrient management decisions before the crop starts growing in the spring. Key soil tests include pH, phosphorus, and potassium, and to a lesser extent, sulfur and boron. In particular, potassium is highly related to winter survival so it's important to make sure to have optimum range of potassium in soil before entering the winter. When sampling for immobile nutrients, sampling depth should be six inches, while mobile nutrients (sulfur) should be sampled to 24 inches. Based on the soil test, a fertility program can be established to assure nutrient replenishment and maintain hayfield productivity. To submit soil samples to the K-State Research and Extension Soil Testing Laboratory, see this website: https://www.agronomy.k-state.edu/outreach-and-services/soil-testing-lab/.

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2. Fall soil sampling: Sample collection and submission to K-State Soil Testing Lab

Soil testing provides producers and homeowners important information concerning the fertility status of the soil. This information can help produce better crops and reduce costs by guiding management decisions like the type and amount of fertilizers to apply. If you plan to do your own soil sampling and use the K-State Soil Testing Laboratory, the following outline provides specific information on methods for collecting soil samples and mailing instructions. A companion article in this eUpdate gives a more detailed discussion of collecting a representative soil sample.

Soil collection and submission guidelines

- To take a sample, you will need a probe, auger or spade, and a clean pail. (If you're having the soil analyzed for zinc, be sure to use a plastic container to avoid contamination from galvanized buckets or material made of rubber.) You will also need soil sample containers and a soil information sheet from your local Extension office or fertilizer dealer. You can also order soil sample bags online from K-State Research and Extension by clicking here.

- Draw a map of the sample area on the information sheet and divide your fields into uniform areas. Each area should have the same soil texture, color, slope, and fertilization and cropping history.
- From each area, take a sample of 20-30 cores or slices for best results. At the very minimum, 12-15 cores should be taken per sample. Mix the cores thoroughly in a clean container and fill your soil sample container. For available nitrogen, chloride, or sulfur tests, a subsoil sample to 24 inches is necessary.
- Avoid sampling in old fencerows, dead furrows, low spots, feeding areas, or other areas that might give unusual results. If information is desired on these unusual areas, obtain a separate sample from the area.
- Be sure to label the soil container clearly and record the numbers on the soil container and the information sheet.
- Air-dry the samples as soon as possible for the available nitrogen test. (Air drying before shipment is recommended, but not essential, for all other tests.) Do not use heat for drying.

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- If same-day submission is not possible, samples should be air-dried (see above) or placed in a refrigerator set at 40 degrees F or less. See the companion article in this eUpdate, "*Soil sample handling practices can affect soil nitrate test accuracy*"**.**
- Fill out the information sheet obtained from your Extension office, or download a sheet.
- Take the samples to your local Research and Extension office for shipping. Samples may also be sent directly to the lab by placing them in a shipping container. Information sheets should be included with the package. Shipping labels can be printed from the Soil Testing Lab website listed below. Mail the package to:

Soil Testing Laboratory
2308 Throckmorton PSC
1712 Claflin Road
Manhattan, KS 66506-5503

A listing of the types of soil analysis offered, and the costs is available on the Soil Testing Lab web site, www.agronomy.k-state.edu/outreach-and-services/soil-testing-lab/ . You can also contact the lab by email at soiltesting@ksu.edu and by phone at 785-532-7897.

Additional resource

For more information on the proper procedures for the Soil Testing Laboratory, see K-State publication MF-734 at: https://www.bookstore.ksre.k-state.edu/pubs/MF734.pdf.

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3. The challenge of collecting a representative soil sample

At first glance, soil sampling would seem to be a relatively easy task. However, when you consider the variability that likely exists within a field because of inherent soil formation factors and past production practices, the collection of a representative soil sample becomes more of a challenge.

Before heading to the field to take the sample, be sure to have your objective clearly in mind. For instance, if all you want to learn is the average fertility level of a field to make a uniform maintenance application of phosphorus (P) or potassium (K), then the sampling approach would be different than sampling for pH when establishing a new alfalfa seeding or sampling to develop a variable rate P application map.

In some cases, sampling procedures are predetermined and simply must be followed. For example, soil tests may be required for compliance with a nutrient management plan or environmental regulations associated with confined animal feeding operations. Sampling procedures for regulatory compliance are set by the regulatory agency and their sampling instructions must be followed exactly. Likewise, when collecting grid samples to use with a spatial statistics package for drawing nutrient maps, sampling procedures specific to that program should be followed.

Regardless of the sampling objectives or requirements, some sampling practices should be followed:

- A soil sample should be a composite of many cores to minimize the effects of soil variability. Take a minimum of 12 to 15 cores from a relatively small area (two to four acres). Taking 20-30 cores will provide results that are more accurate. Take a greater number of cores on larger fields than smaller fields, but not necessarily in direct proportion to the greater acreage. A single core is not an acceptable sample.

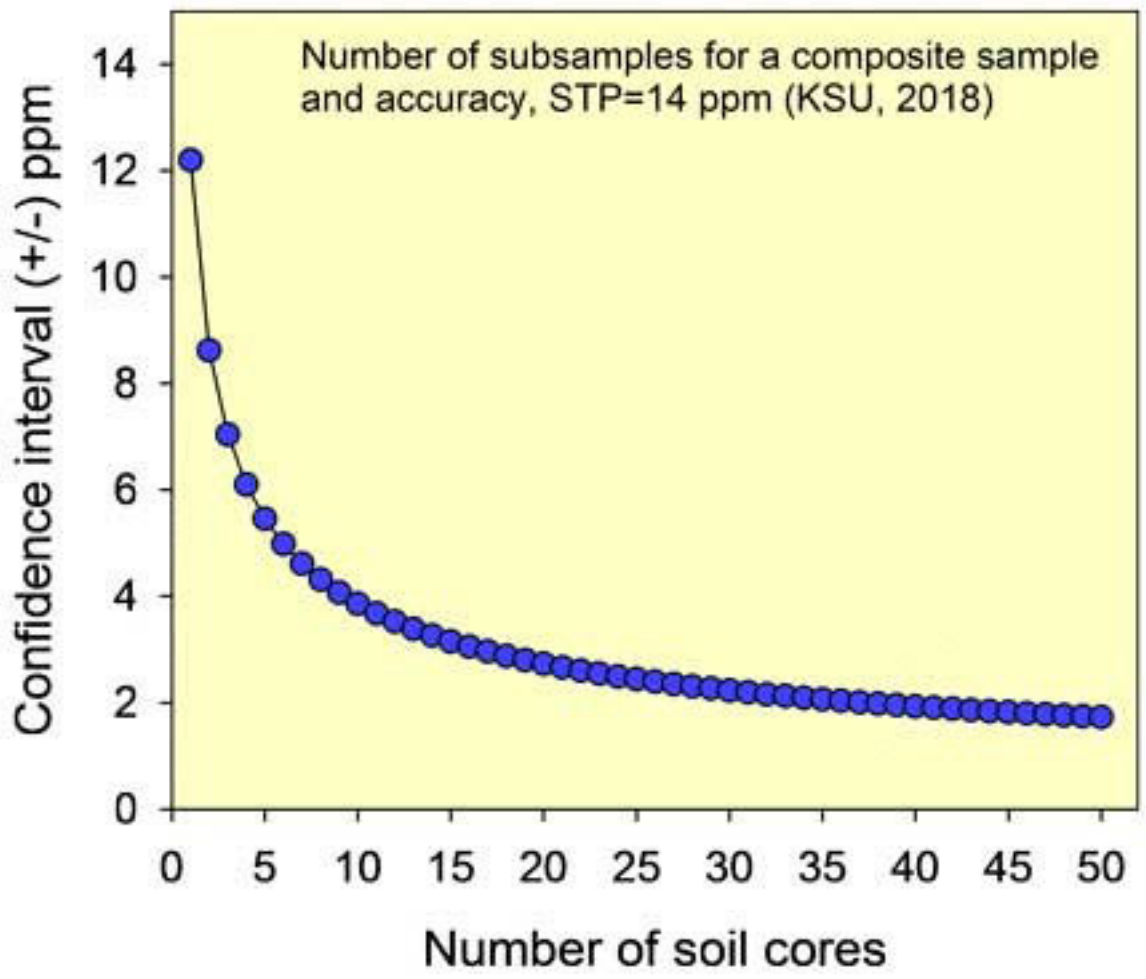

Figure 1. The level of accuracy of the results of a soil test will depend, in part, on how many subsamples were taken to create the composite sample. In general, a composite sample should consist of 15 or more subsamples. For better accuracy, 20-30 cores, or subsamples, should be taken and combined into a representative sample. Graph by Dorivar Ruiz Diaz, K-State Research and Extension.

- Use a consistent sampling depth for all cores because pH, organic matter, and nutrient levels often change with depth. Match sampling depth to sampling objectives. K-State recommendations call for a sampling depth of two feet for the mobile nutrients – nitrogen, sulfur, and chloride. A six-inch depth is suggested for routine tests of pH, organic matter, phosphorus, potassium, and zinc (Zn) (Figure 2).
- When sampling a specific area, a zigzag pattern across the field is better than following planting/tillage pattern to minimize any past non-uniform fertilizer application/tillage effects. With a GPS system available, recording of core locations is possible. This allows future samples to be taken from the same areas in the field.
- When sampling grid points for making variable rate nutrient application maps, collecting cores in a 5-10 foot radius around the center point of the grid is preferred for many spatial statistical software packages.

- Avoid unusual spots obvious by plant growth and/or visual soil color/texture differences. If the information on these unusual areas is desired, collect a separate composite sample from these spots.

- If banded fertilizer has been used on the previous crop (such as strip tillage), then it is suggested that the number of cores taken should be increased to minimize the effect of an individual core on the composite sample results, and to obtain a better estimate of the average fertility for the field.
- For permanent sod or long-term no-till fields where nitrogen fertilizer has been broadcast on the surface, a three- or four-inch sampling depth would be advisable to monitor surface soil pH.

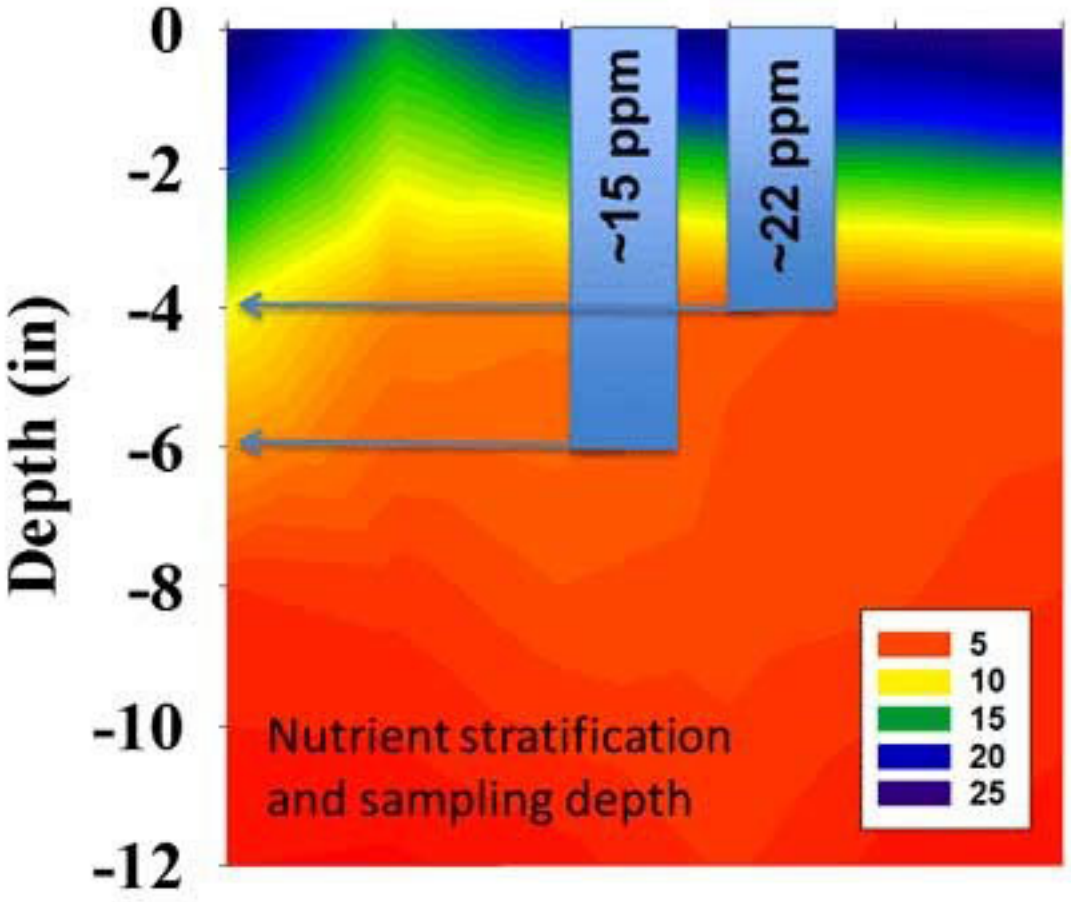

Figure 2. Consistency is sampling depth is particularly important for immobile nutrients like P. Stratification of nutrients and pH can be accentuated under reduced tillage. Image from Dorivar Ruiz Diaz, K-State Research and Extension.

Soil test results for organic matter, pH, and non-mobile nutrients (P, K, and Zn) change relatively

slowly over time, making it possible to monitor changes if soil samples are collected from the same field following the same sampling procedures. However, there can be some seasonal variability and previous crop effects. Therefore, soil samples should be collected at the same time of year and after the same crop.

Soil testing should be the first step for a good nutrient management program, but it all starts with the proper sample collection procedure. After harvest in the fall is good time for soil sampling for most limiting nutrients in Kansas.

Accurate soil tests are dependent on more than proper sampling techniques. Care should be taken regarding the handling/storage of soil samples before submission to a testing facility. Please read the accompanying article "**Soil sample handling practices can affect soil nitrate test accuracy**" in this eUpdate issue.

For instructions on submitting soil samples to the K-State Soil Testing Lab, please see the accompanying article "**Fall soil sampling: Sample collection and submission to K-State Soil Testing Lab"** found in this eUpdate issue.

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4. Soil sample handling practices can affect soil nitrate test accuracy

The accuracy of a soil test is limited, in part, by the quality of the tested sample. For this reason, strong emphasis is placed on ensuring representative samples are collected in the field. However, these samples must also be handled properly after they have been collected.

Soils are home to a diverse population of microorganisms, many of which help decompose crop residue and cycle nutrients in soils. This nutrient cycling is crucial for crop production, but can skew soil test results if it continues in soil samples after they have been collected.

Microorganisms drive the soil nitrogen cycle

The nitrogen (N) cycle in soils is particularly complex and is strongly influenced by microbial activity and, therefore, temperature and soil moisture conditions. Bacteria and fungi consume organic material and use carbon as an energy source. During this process, N contained in the organic matter undergoes several transformations, ultimately converting it to ammonia. This conversion from organic-N to inorganic-N (NH_4^+, ammonium) is called "mineralization." Plants can then take up the ammonium (NH4+), or converted to nitrate (NO_3^-) by certain bacteria through a process known as "nitrification".

The microbial activity requires moisture and heat, and the processes described above happen more quickly in warm, wet soils than in cold, dry soils. Microbial activity does not stop just because a sample has been collected and put in a bag. This activity continues as long as the environmental conditions are favorable. As a result, soil tests for plant-available N have the potential to change substantially if samples are not handled properly. This is an important consideration for growers because these soil test results are used to determine the profile-N credit and, ultimately, adjust N fertilizer recommendations.

Research study on soil sample storage

A recent study at the K-State Soil Testing Lab illustrates what can happen if sample submission is delayed. For this study, soil was collected from the Agronomy North Farm (Manhattan, KS) and thoroughly mixed/sieved to homogenize the material. This soil was then placed into sample bags, which were randomly assigned to different combinations of storage temperature and duration. One set of samples was kept in a refrigerator while the other set was kept in a cargo box in a truck bed. To monitor changes in soil test levels over time, three sample bags were removed from the refrigerator and truck box every two days (48 hours) and tested in the lab.

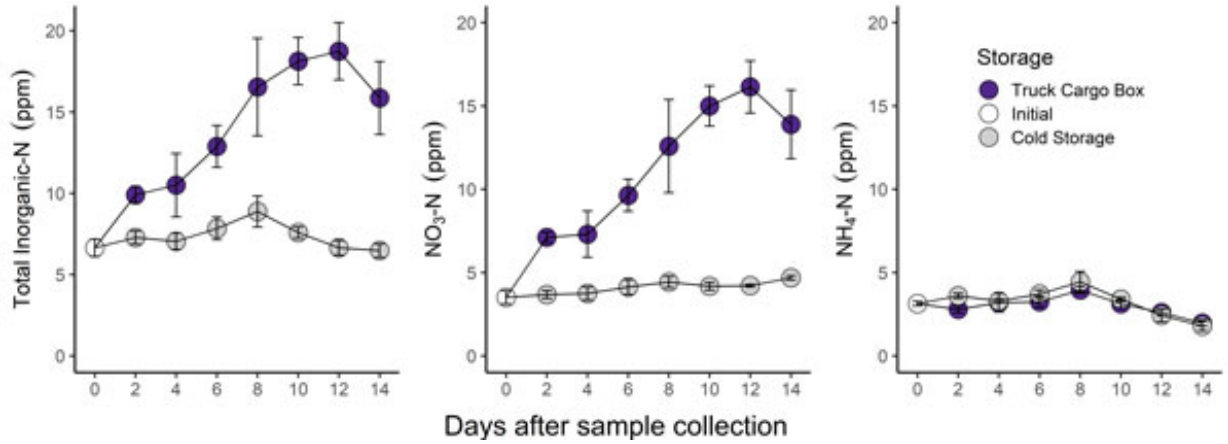

Figure 1. Change in soil test nitrogen parameters over a 14-day storage period. Samples stored in an unrefrigerated cargo box are indicated by purple points. Samples stored in a refrigerator (38F) are indicated by grey points. Graphs by Bryan Rutter, K-State Research and Extension.

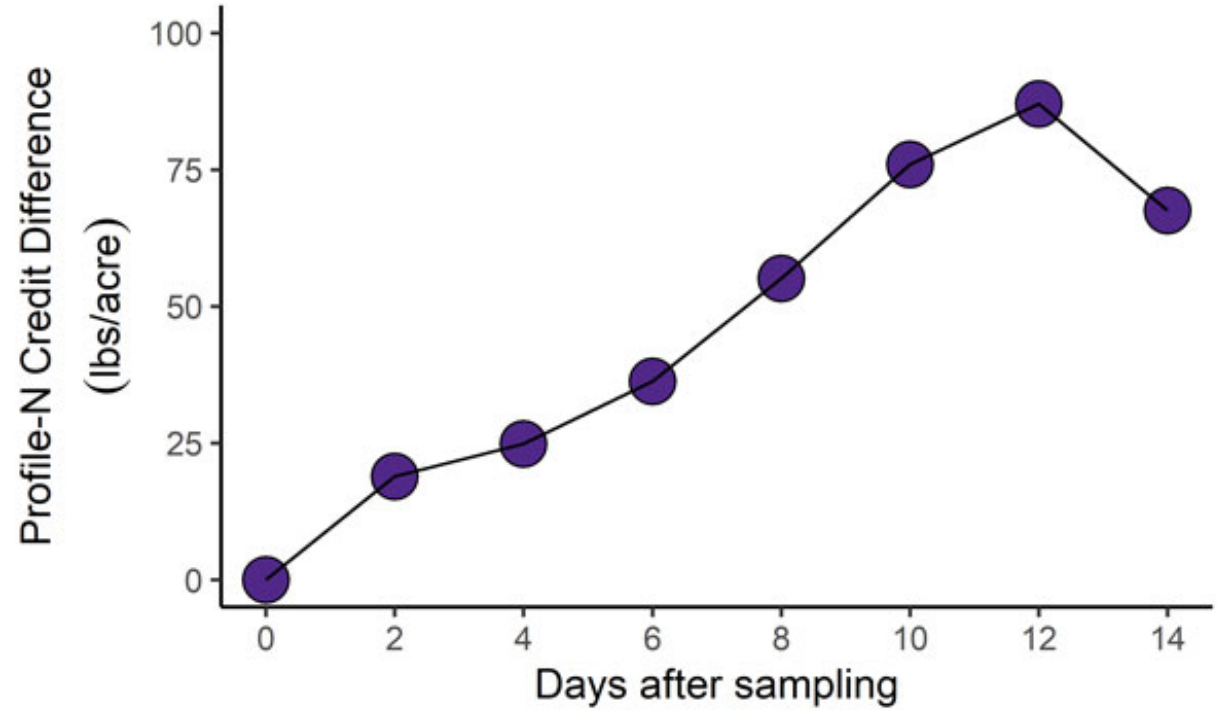

Figure 2. Difference in the soil test nitrogen credits between refrigerated and unrefrigerated samples over a 14-day storage period. Profile-N credits assume a 24-inch profile soil sample depth, and are calculated as: N ppm x 0.3 x 24 inches**. Graph by Bryan Rutter, K-State Research and Extension.**

Take home points from the K-State Soil Testing Lab study:

- Mineralization and nitrification led to more than a 3x increase in soil test nitrate in the undried and unrefrigerated "Truck Cargo Box" samples (purple points in Figure 1).
- Soil test nitrogen did not change substantially in refrigerated samples.
- Profile-N credits calculated from soil test N results were nearly 100 lbs of N/acre higher for the unrefrigerated samples (Figure 2).
- Improper handling and storage of soil samples can dramatically reduce soil test accuracy and may lead to under or overfertilizing crops.

K-State Soil Testing Lab Recommendations

- Submit soil samples to the lab as soon as possible, ideally on the same day they were collected.
- If same-day submission is not possible, samples should be air-dried or placed in a refrigerator set at 40 degrees F or less.

Please see the accompanying article "The challenge of collecting a representative soil sample" for guidance on field soil sampling practices.

For detailed instructions on submitting soil samples to the K-State Soil Testing Lab, please see the accompanying article "*Fall soil sampling: Sample collection and submission to K-State Soil Testing Lab*".

For detailed information on how N credits are calculated please see the MF-2586 fact sheet: *"Soil Test Interpretations and Fertilizers Recommendations"*.

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5. Weed management practices: Fall scouting and equipment cleaning

Weed management encompasses more than controlling actively growing weeds. Farmers can be proactive to help prevent the future spread of weeds. Two different management practices are discussed in this article: fall scouting for weed escapes and equipment cleaning.

Fall scouting can help plan for future control

Weeds that escape control by in-season management practices can cause several problems, including the possibility of reduced harvest efficiency and crop yield. Even if these factors do not justify an herbicide application, it is important to consider the future costs of seeds produced by those escapes – particularly if those escaped weeds produce a lot of seed and/or are herbicide resistant.

Just a few escapes of species such as waterhemp or Palmer amaranth can have a big impact (Figure 1). For example, research conducted in Georgia showed that one female plant in five acres added about two million seeds per acre to the soil. Those seeds can have impacts for many years. It took six years of total Palmer amaranth control to deplete the seedbank by 98% in Texas. In some situations, scouting during the weeks leading up to harvest may provide an opportunity to remove these plants by hand to reduce the number of seeds in the soil.

Figure 1. The waterhemp plants growing between these corn rows may not have reduced grain yield, but they will produce seed that must be controlled in future years. Photo by Sarah Lancaster, K-State Research and Extension.

Scouting for weeds at harvest, even if you simply make notes from the combine, is important for planning future weed management.

When scouting, make notes about:

- which weed species are present,
- where weed escapes are present, and
- any changes in the size or location of areas with weed escapes.

Some observations might be the result of soil or environmental conditions, while others might suggest problems with the herbicide selection or application equipment. However, some of these escapes might indicate the presence of herbicide-resistant weeds in your field – especially if the same herbicide program has been used for a number of years. Two examples of observations that might indicate herbicide resistance are 1) a growing patch of a particular species, or 2) herbicide failure on a few plants of a single species that is normally controlled.

Stop spreading weed seed during harvest activities

Weeds can spread in a variety of ways, including on farm equipment. As you move harvest equipment from field to field, be aware of the potential to spread weed seed – especially if uncontrolled weeds are known or suspected to be herbicide resistant. Some steps to prevent the spreading weeds when moving harvest equipment from one field to another are listed below.

- Clean new-to-you equipment so someone else's weeds are not introduced to your farm.
- If possible, harvest fields with excellent weed control first.
- Harvest fields where weeds are or might be herbicide resistant last.
- Harvest around areas with extremely dense weed populations.
- Slow the combine to 'self clean' between fields:
    - run the unloading auger empty for a minute or two
    - open grain elevator doors, rock tramp, and unloading auger sump then run the separator with maximum air flow and suction
- Use an air compressor to remove material remaining in rock trap and grain auger and from the head, feeder house, straw spreader
- Take half a day to do a deeper clean when possible
- Check fall-tillage equipment between fields

It is very difficult to completely remove weed seeds from harvest equipment. However, taking a few minutes to reduce the number of seeds on your harvest equipment may save time and money in the future.

References: Bagavathiannan and Norsworthy, 2012; Webster and Grey, 2017

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6. The summer of 2022: Hot and dry across Kansas

The meteorological summer of 2022 began on June 1 and ended on August 31. Between those two dates Kansans endured a dry, hot summer. As a result, drought conditions deteriorated (Figure 1) to the worst we have seen in nearly a decade. Historically speaking, where does summer 2022 rank on the lists of driest and hottest years?

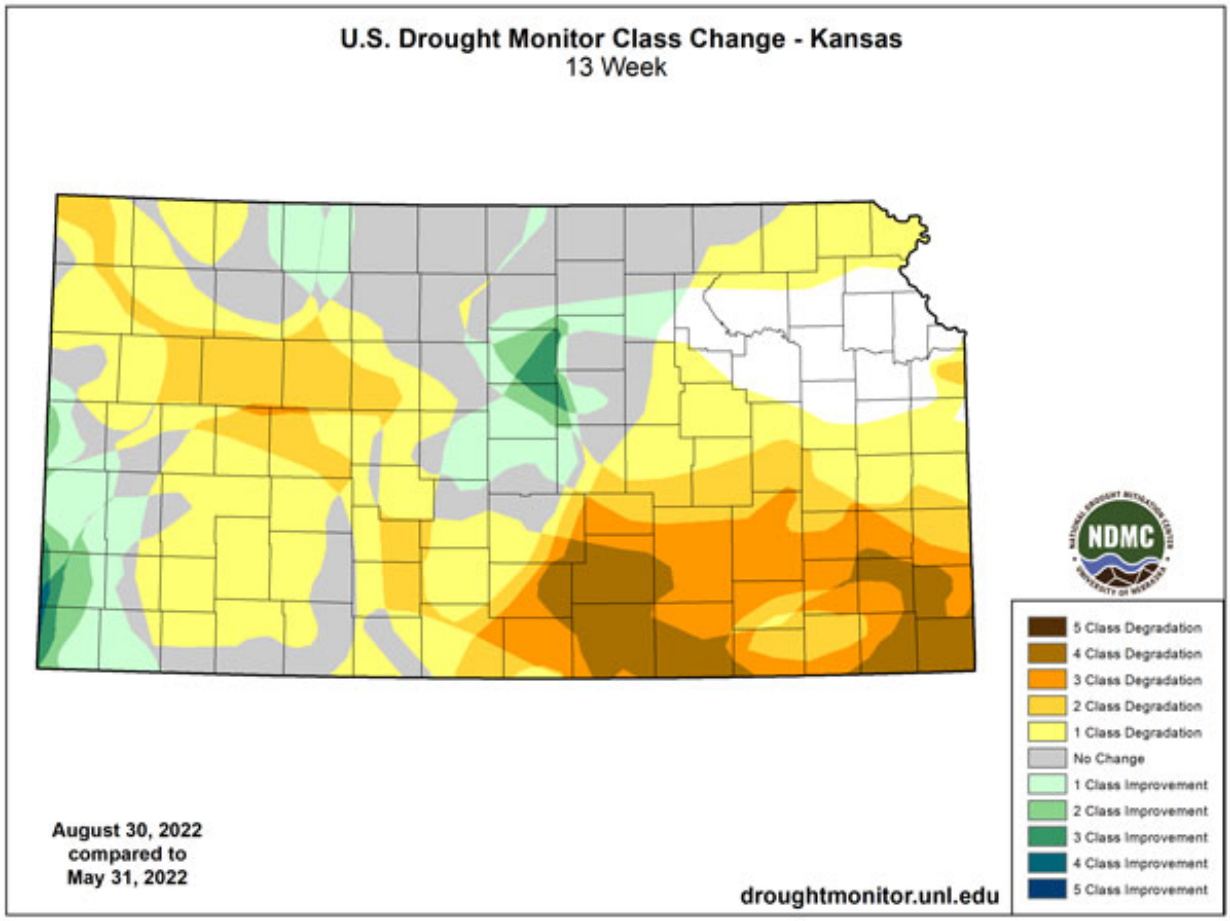

Figure 1. Change in drought status in Kansas during meteorological summer 2022. Source: National Drought Mitigation Center

2022 was near the climatological median entering the summer months. However, it quickly deviated towards drier than normal as the dry periods began to add up. At the end of August, Kansas was running near the 10th percentile in yearly accumulated precipitation. Kansas should average about 22 inches of rain statewide. However, this year Kansas has only observed a little over 17.5 inches. This is not ideal timing for dry conditions as summer crops require timely moisture. As a result, the condition of corn has progressively decreased through the summer. Only 3% is considered in "Excellent" condition and 27% considered "Very Poor" according to USDA NASS data. The degradation of conditions matches very well with the trend downward in accumulated precipitation (Figure 2).

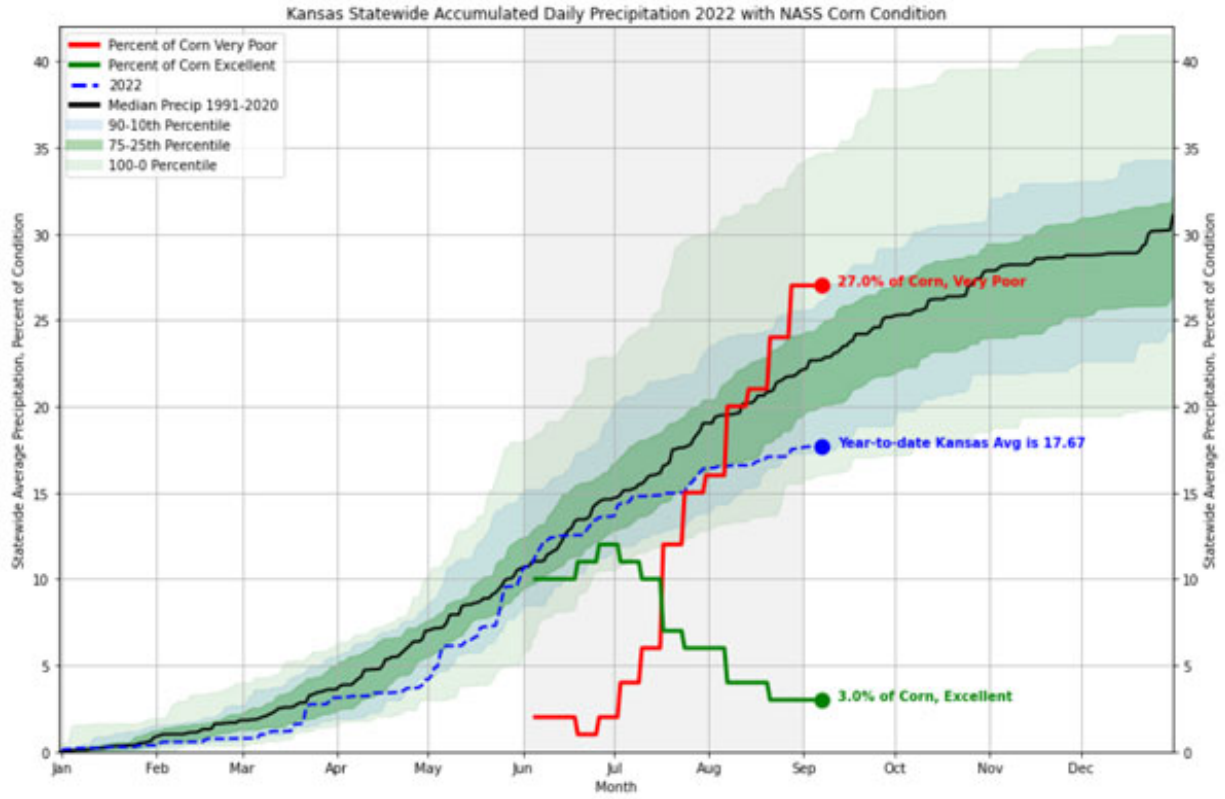

Figure 2. Accumulated statewide precipitation compared to climatology, plotted with previous and current corn crop condition from USDA NASS.

A closer look at this summer

Looking at data at a more local level, the nine Kansas climate divisions have climate data as far back as 1895. Table 1 shows how 2022 ranks against the previous 127 prior years of data. Each climate division ranked within the top 50 on both the lists of warmest and driest summers on record. Many areas ranked much higher, as both northwest and west central Kansas finished in the top 10 on both lists. Northeast Kansas was the only division to not rank in the top quarter of warmest summers; it barely missed, ranking as 33rd warmest out of 128 years. Southwest and south central Kansas both finished as 10th warmest, and southeast and central both finished in the top 20. Statewide, summer 2022 ranks as the 18th warmest on record. For precipitation, only east central finished outside the top third of driest summers, but its rank of 46th is still well inside the top half of driest summers despite averaging less than an inch below normal. All other regions averaged from 1.5 to 3.8 inches below normal for summer. Statewide, summer 2022 ranks as the 20th driest on record.

Table 1. Statewide and climate division averages, departures from normal, and rankings for meteorological summer 2022 (June-July-August, abbreviated JJA here) and for each individual month for temperature. Departures from normal are based on normals for the period 1991-2020. Rankings are based on the period 1895-2022.

Div. #	Region	Temperature (rank-warmest season/months)					
		2022 Average (°F)	Departure (°F)	JJA	June	July	August

				Rank	Rank	Rank	Rank
1	Northwest	77.4	+3.2	6	20	14	20
2	North Central	77.7	+1.4	29	32	65	36
3	Northeast	76.8	+0.6	33	28	70	43
4	West Central	78.1	+2.8	10	32	15	24
5	Central	79.4	+1.8	18	34	38	24
6	East Central	78.3	+1.6	21	27	36	37
7	Southwest	79.4	+2.7	10	33	11	30
8	South Central	80.9	+1.9	10	37	19	25
9	Southeast	80.2	+2.4	14	30	13	23
Statewide		78.6	+2.1	18	29	25	31

If we look at each of the three months individually (Table 2), we see that the statewide rankings for warmest months are all quite similar, ranging from 25th to 31st warmest. Northwest Kansas ranked in the top 20 for all three months, which led to 2022 ranking as their 6th warmest summer on record. Rankings for precipitation are more variable, especially in July when precipitation was above normal in northeast and north central Kansas. Unfortunately, this precipitation was focused in the latter part of the month, after a significantly hot and dry two-to-three weeks. This resulted in significant corn pollination issues, even in irrigated crops (https://eupdate.agronomy.ksu.edu/article_new/drought-and-heat-stress-in-kansas-corn-fields-507-3).

Table 2. Statewide and climate divisional averages, departures from normal and rankings for meteorological summer 2022 (June-July-August, abbreviated JJA here) and for each individual month for precipitation. Departures from normal are based on normals for the period 1991-2020. Rankings are based on the period 1895-2022.

Div. #	Region	Precipitation (rank-driest season/months)					
		2022 Average (inches)	Departure (inches)	JJA Rank	June Rank	July Rank	August Rank
1	Northwest	5.02	-3.94	7	20	64	6
2	North Central	8.14	-2.14	30	32	101	5
3	Northeast	10.48	-2.09	33	44	88	17
4	West Central	4.61	-3.83	6	17	77	7
5	Central	8.87	-1.60	41	68	49	12
6	East Central	11.47	-0.86	46	45	69	40
7	Southwest	6.00	-2.21	28	62	75	3
8	South Central	6.65″	-3.49″	20	83	28	4
9	Southeast	9.25″	-2.91″	28	80	18	23
Statewide		7.71″	-2.56″	20	31	53	7

August was the driest month of the three (Table 3). All nine climate divisions had below-normal precipitation. Amounts averaged under one inch in five of the nine divisions, where departures for

the month ranged from 1.47 to 2.25 inches below normal for August. As a result, all five of these regions ranked in the top 10 driest Augusts on record, led by southwest Kansas where it was the third driest August on record, ranking only behind 1913 (0.50") and 1983 (0.65"). South central finished August as 4th driest, and north central finished as 5th driest. Northwest (6th) and west central (7th) also had a top 10 driest August. Impacts were observed in hay, corn, and especially soybeans (https://eupdate.agronomy.ksu.edu/article_new/drought-and-heat-stress-in-kansas-soybean-fields-508-1).

Table 3. Statewide and divisional average precipitation and departure from normal for August, 2022. Normals are based on the period 1991-2020.

Div. #	Region	August Precipitation (inches)	
		2022 Average	Departure
1	Northwest	0.88	-1.68
2	North Central	0.90	-2.19
3	Northeast	1.92	-1.80
4	West Central	0.92	-1.47
5	Central	1.26	-1.96
6	East Central	2.65	-0.99
7	Southwest	0.70	-1.72
8	South Central	0.66	-2.25
9	Southeast	1.74	-1.78
Statewide		1.24	-1.77

While no individual location finished the month with no rain, there was one CoCoRaHS observer in Barber County (0.4 miles west-southwest of Medicine Lodge) who reported only a trace of rainfall for the month. Three CoCoRaHS observers in nearby Pratt County reported 0.1inches of rain or less. The airports at both Garden City (0.16 inches; 2nd driest since 1894) and Dodge City (0.32 inches; 3rd driest since 1875) also were extremely dry.

What does this mean for fall? You can read about the fall outlook here: https://eupdate.agronomy.ksu.edu/article_new/2022-fall-weather-outlook-for-kansas-509-6.

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7. War Against Weeds podcast kicks off fourth season

Are you interested in keeping up with the latest weed management information? If so, you'll want to add the "**War Against Weeds**" podcast to your weed management toolbox. This podcast is an outreach effort from Sarah Lancaster, K-State Extension Weed Science Specialist, Mandy Bish, Extension Weed Scientist at the University of Missouri, and Joe Ikely, Extension Weed Scientist at North Dakota State.

There are currently about 60 full-length episodes available. Season four has officially started with episode one on September 7. Season three episodes have included topics that range from kochia biology and management to the influence of the Endangered Species Act enforcement on weed management. Season three wrapped up in late spring with segments on herbicide resistant weed research and using drones for weed management.

Episodes are approximately 30 minutes long and free to access. They are posted at https://waragainstweeds.libsyn.com/ in addition to being available on Spotify, iTunes, and Google Podcasts.

If you have any suggestions for future episodes, please let us know!

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8. Limited Irrigation Corn Management Field Day - September 13

K-State Research and Extension is hosting a Limited Irrigation Corn Management Field Day on September 13 at 4:30 pm. Attendees will have the opportunity to hear from specialists from K-State and Colorado State on limited irrigation strategies. Part of the program includes a corn hybrid showcase with seed company representatives and a discussion on grain basis with a K-State agricultural economist. Twenty-eight corn hybrids planted at seeding rates ranging from 12,000 to 28,000 will be on display in plots located southwest of Colby.

Dinner is provided courtesy of the field day sponsors. Please RSVP by September 12. You can register online at www.northwest.ksu.edu/agronomy or call 785-462-628.

Plot location: West of Colby on US24 to Road 15, 8 miles south to Road K, then ¾ mile west **OR** go south of Colby on K25 to Road K, then 4.75 miles west.

Event Program

4:30 pm	Introductions and discussion of field management, weather, and research trial
4:40 pm	Limited irrigation strategies – Lucas Haag, KSU and Joel Schneekloth, CSU
5:30 pm	Hybrid showcase with seed company representatives
6:20 pm	Q&A, discussion, and time to freely browse plots
6:40 pm	Travel to City Limits for supper
7:15 pm	How will a small High Plains corn and sorghum crop affect regional basis? – Dan O'Brien, KSU Ag Economist

If you have any questions, please contact the K-State Northwest Research-Extension Center at 785-462-6281 or email Lucas Haag at lhaag@ksu.edu

K-STATE Research and Extension

Limited Irrigation Corn Management Field Day

September 13 at 4:30 PM CT

Register at www.northwest.ksu.edu/agronomy or (785) 462-6281
No Cost, Please RSVP by September 12 for Dinner

See 28 hybrids planted at seeding rates ranging from 12 to 28k in the plot located southwest of Colby and join discussions on limited water management and grain basis

Plot Cooperator: McIlnay Farms

Plot location - West of Colby on US24 to Road 15, 8 mi south to Road K, then 3/4 mi west **OR** go south of Colby on K25 to Road K, then 4.75 mi west

- 4:30 pm – Introductions and Discussion of field management, weather, and research trial
- 4:40 pm – Limited Irrigation Strategies Lucas Haag, KSU and Joel Schneekloth, CSU
- 5:30 pm – Hybrid showcase with seed company representatives
- 6:20 pm – Q&A, Discussion, and Time to Freely Browse Plots
- 6:40 pm – Travel to City Limits for Supper
- 7:15 pm - How will a small High Plains corn & sorghum crop affect regional basis? Dan O'Brien, KSU Ag Econ

Cover Your Acres Winter Conference

HOXIE IMPLEMENT CO., INC

WESTERN SPRINKLERS, INC. VALLEY

DEKALB

Golden Harvest

PIONEER BRAND · SEEDS

BREVANT seeds

NORTHWEST IRRIGATION Reinke 785-460-1880

LG SEEDS

If you have any questions, please contact us at the K-State Northwest Research-Extension Center at (785) 462-6281 or via email at LHaag@ksu.edu