

Column Name- The Heartland Minute

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Soil Sampling Accuracy

You can tell what time of year it is by what piece of equipment is being borrowed from the extension office the most. For example, lately, our soil probe has been very busy. Meaning that it must be getting close to fall!

Most producers and homeowners alike, know the importance of soil testing. From a soil test you get answers in regards to soil fertility, this information can help produce better crops and reduce costs by guiding management decisions. If you've never taken the time to complete soil tests on your property, the Greenwood County extension office can help you through the process. While the process is relatively simple, one of the most common mistake folks make is by not collecting a good representative sample.

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 P or 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.

Regardless of the sampling objectives, according to Dorivar Ruiz Diaz, K-State Research and Extension's Nutrient Management Specialist, some sampling practices should always 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.
- 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 (P), potassium (K), and zinc (Zn).
- 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 locations 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 information on these unusual areas is desired, collect a separate composite sample from these spots.
- 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.

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.

For more information regarding Agriculture and Natural Resources, 4-H Youth Development, or K-State Research and Extension call the office at 620-583-7455, email me, Lindsay Shorter, at lindsayshorter@ksu.edu, or stop by the office which is located inside the courthouse. Be sure to follow K-State Research and Extension- Greenwood County on Facebook for the most up-to-date information on Extension education programs and the Greenwood County 4-H program.