



October 11, 2019

FALL HAS SOIL SAMPLING ADVANTAGES

This past week I was doing some soil sampling on an on-farm research soybean study in the Tobias area. The cooperators were comparing soybeans that were later planted at 160K population and no foliar fungicide and insecticide applied versus early planted soybeans at 130K with foliar fungicide and insecticide applied. The plots are randomized and replicated and will be a part of the 2019 Nebraska Extension on-farm research results one of 104 studies! You have to admire the farmers involved in these studies for the work involved and willingness to share the unbiased statistically based results published by Extension.

My soil samples for nutrient status at the site were not easy because of the wet soil. It took a fair amount of WD-40 on the sampling tube to keep the soil from sticking. Fortunately WD-40 does not affect the soil sample results. I also sampled for soybean cyst nematode. It reminded me that fall is the best time to take soil samples, for several reasons: After corn and soybeans have been harvested it's easy to walk between the rows of stubble; the pressure of spring planting and crop harvest is over; and soil analyses are more reliable than analyses from samples taken in early spring. The results can really help in planning for the next year's fertilization program.

I had a client this week ask if he should grid sample again as in the past or try a different approach. That was a great question and the proper answer is it depends! With today's agricultural economy farmers are questioning everything on the cash flow sheet that they can to lower expenses. In looking at the Nebraska Farm Business Association data of the top third profitability producers, they all performed higher in lowering expenses to a small degree in all categories. The nickels and dimes do add up.

If you grid sample some fields this fall, I suggest that grid samples be collected every five years for phosphorus. Ag lime application, according to recommendations, should amend soil pH for 8-10 years. Even if variable rate lime application has occurred according to a grid-sampled map of pH, it should not be necessary to grid sample for soil pH for 8-10 years after application.

Choose grid sampling if previous management has altered soil nutrient levels such as manure, land leveling, if you take on a new field with no sampling history or if you have a small field with different cropping histories that have been merged into one. Another reason would be if you need an accurate organic matter map of the field. Farmsteads with livestock history will likely leave areas of higher organic matter and higher phosphorus levels. Pastures which were not converted to farmland for many years are likely to show up clearly. There is very likely to be considerable difference between upland, side-slope, and lower areas of fields influenced by past years of erosion history. On irrigated fields the most common variance is caused by leveling for furrow applications done some time in the past. Old channels of streams are also quite apparent. Do not save money by doing 4 or 5 acre grids. This reduces the samples in half compared to 2.5 acre grids but sacrifices too much accuracy of the results.

An alternative is to take past grid sample information, yield maps, soil type and other precision ag data and sample in zones or directed soil sampling. These samples could be georeferenced but that will add cost. Zone management assumes uniformity based on experience and information. Georeferencing the zone samples adds cost but still makes variable rate application a possibility.



The bottom line is both grid and directed soil sampling are valid options for precision soil sampling — each has advantages and disadvantages. Unless the grid is dense enough, grid sampling may miss patterns and boundaries that are evident from looking at soil surveys or yield maps. Grid sampling is very expensive — both to collect and to analyze the samples. Directed sampling uses other sources of spatial information to make informed decisions on where to sample, however, there may be patterns in soil fertility which are not detectable except with grid sampling. For more information go to: <https://cropwatch.unl.edu/ssm/soilsampling>

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