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FALL SOIL SAMPLING — A GREAT WAY TO BEGIN PLANNING FOR NEXT YEAR'S CROP

Each crop year has unique weather and the crop year of 2007 is no exception. Some areas of the Northern Great Plains have experienced drier than normal moisture conditions and warmer than normal temperature conditions. In some of these areas ample soil moisture conditions early in the growing season resulted in excellent early crop growth, but ran short because of the lower than normal growing season precipitation...this caused crops to ripen earlier and yield less than what was expected. Lower yields due to dry conditions usually means there is a higher than normal carry-over of $\text{NO}_3\text{-N}$ in the soil. If you were fortunate enough to live in an area where growing season moisture has been adequate and not excessive, the excellent crops grown will have removed most of the $\text{NO}_3\text{-N}$ in the soil and soil test N levels will be less than normal for the area. Either way, if the warm weather has encouraged the crops to mature faster, the early harvest does open up the possibility to take soil samples sooner in the fall.

Generally, fall soil sampling on fields in the Northern Great Plains has been delayed until early October, but there are some advantages to start soil sampling soon after crops are harvested. First, there is more time to take soil samples to allow informed decisions for overall fertilizer recommendations...especially if fall N applications are considered. Fall N applications in this region are usually economically advantageous over spring applications because of lower N fertilizer prices in the fall compared to the spring. Secondly, poor weather later in the fall may interfere with taking of soil samples, especially if winter weather comes early. Thirdly, sampling is completed before use of residual soil N by volunteer crop growth. Much of the N used by volunteer growth in the fall is leached out of the frozen and dead volunteer crop residues and becomes available to next year's crop.

The only disadvantage of early fall soil sampling is in a year when ample early fall precipitation is followed by warmer than normal conditions well into the fall. This type of moist and warm condition can allow extra mineralization of N from soil organic matter. This extra soil mineral N will not have been present when the soil was sampled earlier, but will be available to the next year's crop. If such a fall season is experienced it may be beneficial to take some additional soil samples from selected fields early the following spring to determine the extent of fall N mineralization. It is often not more than 15 to 20 lb of extra N per acre.

Research over time has shown little if any need to delay soil sampling on perennial pasture and hay fields. This is because perennial forage stands tend to use up residual $\text{NO}_3\text{-N}$ very effectively and little is left over and allowed to be subject to losses from leaching or denitrification. The exception may be recently seeded stands where the root systems of the forages may not be extensive enough to use the N present.

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Abbreviations in this article: N = nitrogen; NO_3 = nitrate.