



Winter 2003-2004, No. 5

PAY ATTENTION TO SOIL SAMPLING DETAILS

Soil sampling done properly forms the basis of a successful long-term soil and crop nutrient management plan. But care in details at sampling time is critical. It is critical to follow the instructions from the laboratory, or the Extension service, depending upon the calibration system to be used in making the recommendations. Most universities or labs have published instructions to guide sampling to match the calibration data used in their recommendations.

Probably the most common sampling plan, at least in the Midwest, is a 6-in. or 7-in. sample. This relates back to the common depth of moldboard plowing, and thus the depth to which nutrients were mixed with conventional tillage. It works out mathematically that an acre-sized block of a silt loam soil, 6-2/3 in. deep would weigh approximately 2 million pounds. This makes an easy conversion of soil test numbers in parts per million (ppm), to pounds per acre of nutrients estimated to be available to the crop. Simply multiply the ppm value by 2 to convert to parts per 2 million, or pounds per acre.

But the most important point is to be consistent...collecting every sample as close as possible to the same depth. Marking the soil probe with permanent ink, a painted line, or a file mark is helpful. Some probes come with a line pre-inscribed for this purpose. For hydraulic probes, there is usually a depth control setting for this purpose. Uniform sampling depth is essential if sample results from different areas or different years are to be compared, which is usually the goal.

Number of cores per sample is also important to consider. Generally, more is better. However, they should be carefully mixed in the field and in the lab. Midwest guides usually recommend 5 to 8 cores per sample. Great Plains recommendations are on the order of 15 to 20 cores per sample. In any case, all should be complete cores collected to the prescribed depth and should be carefully mixed in a plastic bucket and then a sub-sample taken to send to the lab. The recommended size of area represented by each sample, or the acres per sample also varies considerably. In the Midwest, 2-1/2 to 3-1/2 acres per sample is common. In the Great Plains, each sample may represent 20 or more acres. Follow local recommendations.

In some situations, such as where stratification is suspected due to years of reduced tillage, there may be a value in taking some shallow samples, such as to a depth of 2 or 4 in., to be sure that nutrient supplies are sufficient for early growth.

There are many details to consider. Most important is to be consistent, and to document procedures and sample locations. This is especially important when the sample results are used to guide variable-rate fertilizer applications or to compare to yield monitor data or other geo-referenced information in making management decisions.

Soil sampling, done right, is one of the more important management tools for fine-tuning production systems for optimum yields and profits. Successive years of soil test records help determine whether fertilizer applications are keeping up with crop removal over time. This type of comparison is possible only if sampling procedures are consistent and samples are processed by the same lab procedure. The value of soil testing is greatly enhanced by paying attention to the details. Most important—**use soil testing.**

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