

Take a Good Soil Sample (excerpts from Pm-287, *Take a Good Soil Sample*)

Select sampling areas within a field. Ideally, samples should represent a uniform soil area of 10 acres or less. Although high fertilizer and/or manure rates may mask initial soil fertility differences that are due to soil type, organic matter levels are closely related to the soil mapping units. Base the selection of each sampling area on a recent soil survey map that is made up of mapping units. Individual sampling areas should be distinguished by soil type, slope phase, and erosion phase.

1. Basic sampling rules. Avoid, or sample separately, all odd or dissimilarly treated areas not representative of the uniform soil area. As a general rule, soils of distinctly different colors should not be mixed.

2. Collecting a representative sample. Take 15 to 20 separate cores, borings, or trowel slices at random in a zigzag pattern from the sampling area. Take 20 or 30 more cores if the area is variable and location of fertilizer bands is unknown. More cores will lessen the effect of one core taken from a fertilizer band. Take equal size cores, bores, or trowel slices to an equal depth. If the field is usually plowed, take samples to plow depth. If the field is not plowed, sample to a 6-inch depth.

3. No-till and conservation tillage. Continuous use of broadcast fertilizers can rapidly reduce the surface soil pH of no-till and conservation tillage fields. Some herbicides may be de-activated resulting in reduced effectiveness and poor chemical weed control. Standard soil sampling procedures do not accurately show the pH of the soil surface. In samples taken to 6 to 8 inches, the acidity of the surface few inches is diluted by the usually higher pH of the subsoil. In order to assess surface pH it is necessary to take a separate 0-2 inch sample from the sampling area. Phosphorus and potassium should be determined in a separate 0-7 inch sample. Chisel plowed or disked fields should be treated as no-till fields because neither implement effectively incorporates surface-applied fertilizers to the tillage depth. For ridge tillage systems, samples should be taken from the shoulder of the ridge or approximately one-half the distance between the row and the center of the rows. Where fertilizer materials are injected 6-8 inches deep, whether it is nitrogen only or phosphorus and potassium, it is suggested that individual probes for the samples be taken randomly among the crop rows.

Keep good records. Perhaps the most important information that can be obtained from soil tests is the changes in soil test results that occur over time. Good records help when evaluating the effectiveness of a fertilizer program.

Ideally, sample each field once every 3-5 years or once each crop rotation. Fields should be in the same crop each time when sampled to reduce variability of the potassium test results. Once you have obtained a comprehensive soil fertility map of each field, you can sample a representative portion of each field and problem areas every 3-5 years as a check on the fertilizer program.