

Education

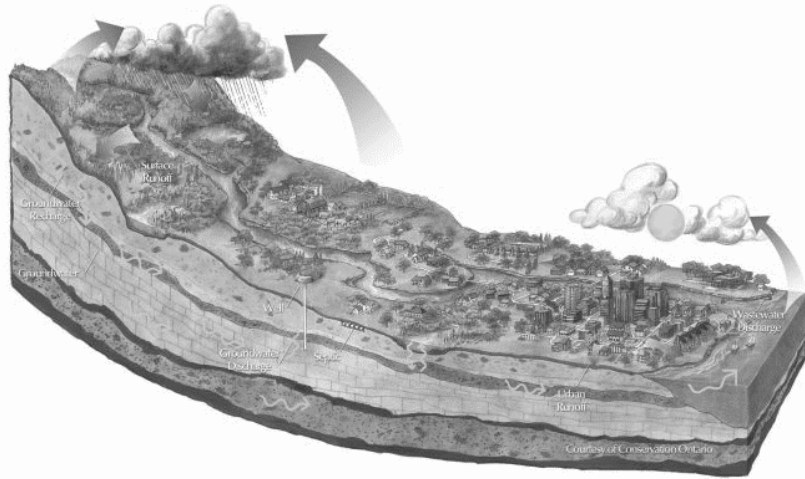
Educational Information

Watersheds

❖ ***What is a watershed?***

A watershed is the land that water flows across or under on its way to a stream, river, or lake.

Definition courtesy the USDA and NRCS



❖ ***How do watersheds work?***

The landscape is made up of many interconnected basins, or watersheds. Within each watershed, all water runs to the lowest point -- a stream, river, or lake. On its way, water travels over the surface and across farm fields, forest land, suburban lawns, and city streets, or it seeps into the soil and travels as ground water. Large watersheds like the ones for the Mississippi River, Columbia River, and Chesapeake Bay are made up of many smaller watersheds across several states.

Definition courtesy the USDA and NRCS

❖ ***Are all watersheds the same?***

Not at all. Watersheds come in many different shapes and sizes and have many different features. Watersheds can have hills or mountains or be nearly flat. They can have farmland, rangeland, small towns, and big cities. parts of your watershed can be so rough, rocky, or marshy that they're suited only for certain trees, plants, and wildlife.

Definition courtesy the USDA and NRCS

❖ Your watershed community.

Everyone lives in a watershed. You and everyone in your watershed are part of the watershed community. The animals, birds, and fish are, too. You influence what happens in your watershed, good or bad, by how you treat the natural resources -- the soil, water, air, plants, and animals. What happens in your small watershed also affects the larger watershed downstream.

There are many things you and your watershed community can do to keep your watershed healthy and productive. To learn what you can do to take care of your watershed, call 1-800-THE-SOIL or call your Natural Resources Conservation Service Office (NRCS) it is listed in the telephone book under U.S. Government, Department of Agriculture.

Soil Sampling/Testing

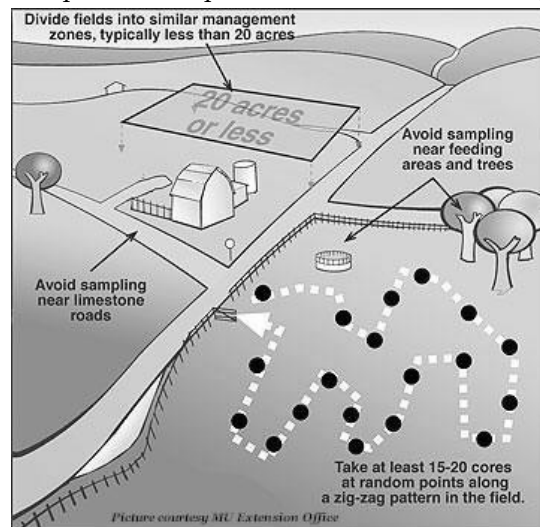
❖ Soil Sampling Procedures.

Soil test results are no better than the samples collected. Proper soil sampling techniques are critical to determine the average nutrient status in a field as well as the nutrient variability across a field. Fertilizer recommendations based on samples not representative of a field may result in over-application and/or under-application of nutrients. This can have a negative impact on both economics and the environment. The Natural Resources Conservation Service (NRCS) requires producers to test their soil every 4 years. These analyses will include pH, organic matter, phosphorous and potassium. Producers are also encouraged to test for soil nitrate levels, when applicable.

The first step is to determine the number of samples needed per field. This is dependent upon the amount of variability within the field. Factors that should be considered include soil types and textures, slopes, cropping history, manure history, drainage, and erosion. A soil sample should be representative of a volume of soil. For Missouri farmers that volume is usually the plow layer of a field. For homeowners that volume may be only the soil in a raised flowerbed. For Missouri farms a sample should represent no more than 20 acres. To obtain

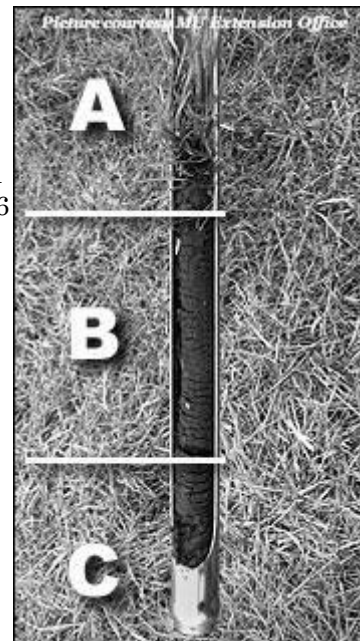
samples that represent this size or smaller, partition fields into areas based on past management, surface color, texture, and slope. Each sample is comprised of 15-20 cores. A core is an individual boring or coring at one spot in the field. Ideally, large uniform fields should have 1 composite sample collected per 20 acres or less. Smaller fields, including contour strips, should have 1 composite sample collected per 5 acres, especially on hilly or rolling ground. Separate samples should be taken from unique areas such as low spots, eroded knolls, terraces, old fence rows, lime or fertilizer spill areas, headlands and saline areas. Fewer samples can be

taken provided there is little in-field variability; the number of cores representing an individual sample is increased; or fertility management of small individual areas is not



fields and uniform landscapes may be divided into areas that are no larger than 40 acres. Smaller fields and hilly or rolling ground should be divided into uniform areas that are no larger than 20 acres. Once you have defined your sampling areas, mark them on a map before you begin. Label them with a unique name or number. You may also want to mark the corresponding sample containers before heading into the field.

The next step is to properly collect the samples. Most samples should be collected after harvest. Do not sample shortly after lime, fertilizer or manure applications. Using a soil probe, soil auger or spade, collect 15-20 cores at random, making sure that the sampling area is adequately represented. Be sure to scrape any crop residue and manure off of the soil surface. The cores should be collected from between the rows of row crops, except for ridge-till plantings. In a conventional tillage system, samples should be collected from the surface layer to a depth of 6 inches for all nutrients except nitrogen. Where ridge till is used, collect core 6 inches to the side of banded fertilizer applications. In reduced and no-tillage systems, the depth sampled has a much greater impact on the soil test results because of the stratification of non-mobile nutrients and pH. Surface samples (0-6 inch) may need to be separated into 0-2 and 2-6 inch depths. Mix cores thoroughly in a clean plastic pail to obtain an individual composite sample. Fill sample boxes or bags from the pail. A 60 - acre field with 3 sampling areas would require 15-20 cores for each of 3 composite boxed or bagged samples. All samples should be kept cool until delivered to the soil testing lab. Identify the sample by a number or name on the sample container. If the sample is not taken to a University of Missouri Extension Center on the day it is collected, place it in a dust free location with the container open to allow drying of the sample. Samples can be submitted to a county Extension Center or to one of the Soil Testing Laboratories, located in Columbia and Portageville. At the time of submission, clients are asked to complete Soil Information Sheets which provide the labs with information relevant to making recommendations. Fees for the soil test are also collected at submission. Completion of the Soil Information Sheet is important to obtain the best possible recommendation based on the soil test, as this information is used to calculate recommendations. Information such as previous crop, soil region and yield goal (for horticulture samples, type of grass/plant and management level) is requested.



Obtaining a 6-inch core for soil sampling.

- A. Discard organic duff on top of soil.
- B. Put 6-inch soil core in sampling bucket
- C. Discard soil below 6 inches.

U.S. Environmental Protection Agency Region VII, through the Missouri Department of Natural Resources, has provided partial funding for this project under Section 319 of the Clean Water Act.