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"Analysis You Can Grow With"®



Defining a Profile Soil Sample

“Profile sample” is a term that is frequently used when discussing soil sampling but, what does this term really mean? Profile sample can have many differing definitions depending on the context in which it is used. It is important to understand the meaning intended in order to avoid misinterpretations.

In geological studies a profile sample is a vertical slice of soil that contains all of the soil horizons present in a sampling site. These profile samples could reach depths of 6 feet or greater depending on the soil depth at a site. This is rarely the intended meaning of the term “profile sample” when discussing soil sampling for soil nutrient content and fertilizer recommendations.

In terms of sampling and analyzing soil with the intention of making a fertilizer recommendation, a soil profile is generally thought of as a sample taken from a depth of soil at which mobile nutrients, such as nitrate, are still available to plant roots. For this reason, the term “soil profile” can vary in depth depending on many factors including the crop to be grown, the person taking the sample, and the calibration data that is used with the analysis to make a fertilizer recommendation. Some sources assume mobile nutrient availability to be at a depth of 24” while others assume a depth of 36”. Neither sources are wrong, as long as the data that their recommendations are calibrated from is accurate.

Further increasing confusion, a profile sample can be one sample, such as a 0-24” sample, or a combination of samples such as a 0-8” surface sample and an 8-24” subsurface sample. A surface sample is any sample taken with a beginning depth at the soil surface or 0”. A subsurface sample is any sample taken under a surface sample, regardless of the starting depth. Again, the term profile sample means you are sampling the entire depth of assumed plant availability of soil mobile nutrients, even if done so in multiple increments of depth.

American Agricultural Laboratory’s Definition of Profile Sample

Here at American Agricultural Laboratory, nitrogen fertilizer recommendations for most field crops such as corn, milo, wheat, and high yielding soybeans, are based on a profile soil sample composed of a 0-8” surface sample and an 8-24” subsurface sample. Samples taken by this method will provide the most accurate nitrogen fertilizer recommendations we can give you. If other sample depths are taken, we will use an adjustment factor to best predict the available nitrate in the 0-8” and 8-24” zone. The most common objective crop to this rule is sugar beets for which we use a profile sample composed of a 0-8” surface sample and an 8-48” subsurface sample. Sugar beets produce a long and rapidly growing taproot that is able to utilize nitrate at much deeper soil depths than other crops.

If there is ever any confusion or further explanation needed regarding any of the topics discussed or other areas of crop production feel free to give us a call at: 308-345-3670