

MMI™ SAMPLING GUIDE

NORMAL ENVIRONMENTS

- In normal soil environments samples should be collected 10 to 25cm below the surface at a consistent depth.
- The initial step in taking an MMI™ soil sample requires the 10cm surface soil layer to be scraped away eliminating loose organic matter, debris, and any possible contamination.
- The sample is then taken between 10 and 25cm depth. The sample should be a “composite” taken over this 15cm interval.
- Using a plastic scoop or shovel take a cross section of the material between the 10 to 25cm depth and put into clean, properly labelled plastic bags. Collect approx. 250 to 350 grams of material.

BOREAL ENVIRONMENTS

- Scrape away any loose non-decomposed matter, debris, and any possible cultural contamination.
- Dig a small pit to penetrate the organic material that still has structure (i.e. decomposing leaves, bark, twigs and peat).
- Identify where the organics begin to decompose and you start to see soil formation. This is the true interface (organic / inorganic) at which to begin your measurements.
- Collect the sample between 10 and 25cm below this interface. The sample should be a continuous composite taken from the 15cm interval.
- Using a plastic scoop take a cross section of the material between the 10 to 25cm depth and put into clean, properly labelled plastic bags. Collect approx. 250 to 350 grams of material.

GUIDELINES

- Ensure not to mix organic and inorganic soils in the collected sample. For example, if the material within the 10 to 25cm zone has a mixture of humus and inorganic soil then proceed to the base of this “mixed zone” and collect the sample from the inorganic material.
- Do not vary depth beneath the true soil interface, or target a specific layer/feature of a soil profile when sampling. Extensive research has shown that mobile element concentrations are linked to the process of capillary rise and the depth at which water is removed from a soil by evaporation and evapotranspiration (i.e. expect to see tree roots). Any significant variation in sampling depth and technique can cause severe problems for interpretation. It is imperative that all samples are collected in a consistent manner. In most tropical terrains, the true soil interface is the ground surface. In terrains with deep organic overburden, the true soil interface is the position where plant matter and debris ceases and organic soil material with an obvious mineral content becomes evident.
- Before actually taking the sample, brush sampling equipment to eliminate residue from previous samples and flush it with soil from the new sample site.
- Samples DO NOT have to be completely free of organics but should have a dominant mineral fraction. During sample collection and handling, no jewellery (watches, rings, bracelets, and chains) should be worn, as this can be a major source of contamination.
- Moist Samples – Damp samples should be collected in a similar manner to soils in dry environments. Samples should not be dried in ovens or pulverised in crushers or mills. In the case of dry plastic clays, sample material can be desegregated by crushing with a mallet between disposable plastic sheets. Sieving should be avoided if there is any possibility of serious cross-contamination during sample collection via the sieve. In this case, larger rocks and twigs/leaves etc. can be removed carefully by hand.
- Organic Material – Organic material in the form of fine roots and hairs, decomposing leaf material and other fine organic debris WILL NOT adversely affect MMI™ analyses. Experimental work has shown that variability in sampling depth has a more significant impact on element responses.
- Contaminated Sites – Where there is a potential contamination problem, samples should be collected as to avoid any contaminated material and the sampler’s judgment must be relied upon. Again, it is extremely important to keep good note of all the potential factors that may affect the sampling and interpretation.

EQUIPMENT

- A 30cm diameter plastic garden sieve or kitchen colander with minus 5mm apertures, available from hardware and supermarkets, is ideal for sample collection. This is used only to remove large pebbles or roots.
- Plastic collection dish with similar diameter and a kitchen floor brush used for cleaning the sieve and dish between samples.
- A bare steel (no paint) garden spade.
- Plastic snap seal bags, do not use calico or brown paper.

Proper labelling of all samples is critical. Do not use water soluble markers or paper inside wet bags.

OTHER ASSISTANCE

SGS has a number of case studies and technical bulletins to help with all your sampling needs. Please visit our web site for further details or to contact our local SGS representatives. Consultants are available for sampling assistance and/or interpretation.

CONTACT INFORMATION

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