CIFOR-ICRAF Living Soils Laboratory Full Sample Analysis Package Pricelist for 2023

Analysis Selection Panel	Sample Processing Methods	Description	Unit Cost (USD/per sample)	Required Minimum Sample weight (g)	Instruments used
☐	Arbuscular Mycorrhiza Fungi	The samples are subjected to wet sieving and decanting method, followed by sucrose density gradient centrifugation technique. Morphological characterization and enumeration are done by use of disserting microscope.	20	50	Centrifuge Balance Microscope Blender
☐	Bacteria: Fungi ratio	Soil micro-organisms are enumerated and identified by dilution plating (helps to lower the concentration of the analyte that is being tested so that it is within range)The soil sample is serially diluted in water and then dispersed into growth plates and measures are observed to subject each target micro-organism to the specific growth conditions	20	10	Autoclave Colony counter Balance Incubator
☐	Bacteria		15	10	
☐	Fungi		15	10	
☐	Actinomycetes		15	10	
☐	Nematodes	Soil samples are wrapped in funnel tissue and placed in a sieve which is allowed to sit in water for 1-3 days to allow nematodes crawl from soil into the water. Observation is done using disserting microscope to access the abundance and morphological features (Soil samples for nematode analysis must be handled delicately as nematodes are living animals and require moisture for survival	15	20	Sieves Microscope
☐	AMF colonization in plants roots	Plants roots colonization by arbuscular mycorrhizal fungi (AMF) are carried using staining procedures. To visualize the AMF colonization, roots are cleared by boiling 4 min in 10% KOH, rinsed three times with tap water and stained according to the method of Vierheilig et al. (1998). After staining, the percentage of root colonization is determined according to the method of Newman (1966).	20	10g of soft plant roots	Oven/ autoclave Microscope
☐	Soil Macrofauna (Earthworms, Termites, Ants, Millipedes, Beetles)	Soil monoliths (25 × 25 × 30 cm) excavated and hand sorted for soil macrofauna. All soil macrofauna (except earthworms) collected and preserved in 75% ethanol, while earthworms to placed in 75% ethanol and fixed in 4%	12	N/A	Hand lens Microscope

		formaldehyde. Soil macrofauna counts and biomass be done in the laboratory.			
	Soil Aggregates	Soils are seperated into four water stable aggregate size fractions by use of mechanical wet sieving method: **(i)** large macroaggregates (>2000 µm, LM), **(ii)** small macroaggregates (250 µm-2000 µm, SM), **(iii)** microaggregates (53–250 µm, m), and (iv) silt + clay sized particles (<53 µm, s+c). **Sand Correction**: Micro- and macroaggregates are corrected for the sand content of the same size	10	250g of soil broken along natural planes of weakness	Wet sieving-apparatus. Balance
	Soil Fractionation	Macroaggregates samples subjected to fractionation analysis using microaggregate isolator, resulting in three fractions: **(i)** coarse POM + sand (> 250 µm, cPOM), **(ii)** microaggregates within macroaggregates (53-250 µm, mM), and **(iii)** silt and clay occluded in macroaggregates (< 53 µm, s+cM)	10	10g of macroaggregates	Micro-aggregate Isolator
	Soil pH	Conduct soil pH: Dry whole soil (in duplicate), mixed and ground to pass through a 2 mm sieve. 10g of soil sample put in a separate 100 ml bottle and 25 millilitres of distilled water added to each bottle. The mixture shaken for ten minutes on a reciprocal shaker at 200 rpm and left to stand for 30 minutes, then stirred for two minutes. The pH of the supernatant liquid is measured using a pH meter	2.5	10g	pH meter

Note: The quality of any analysis is directly related to how well the sample is collected.