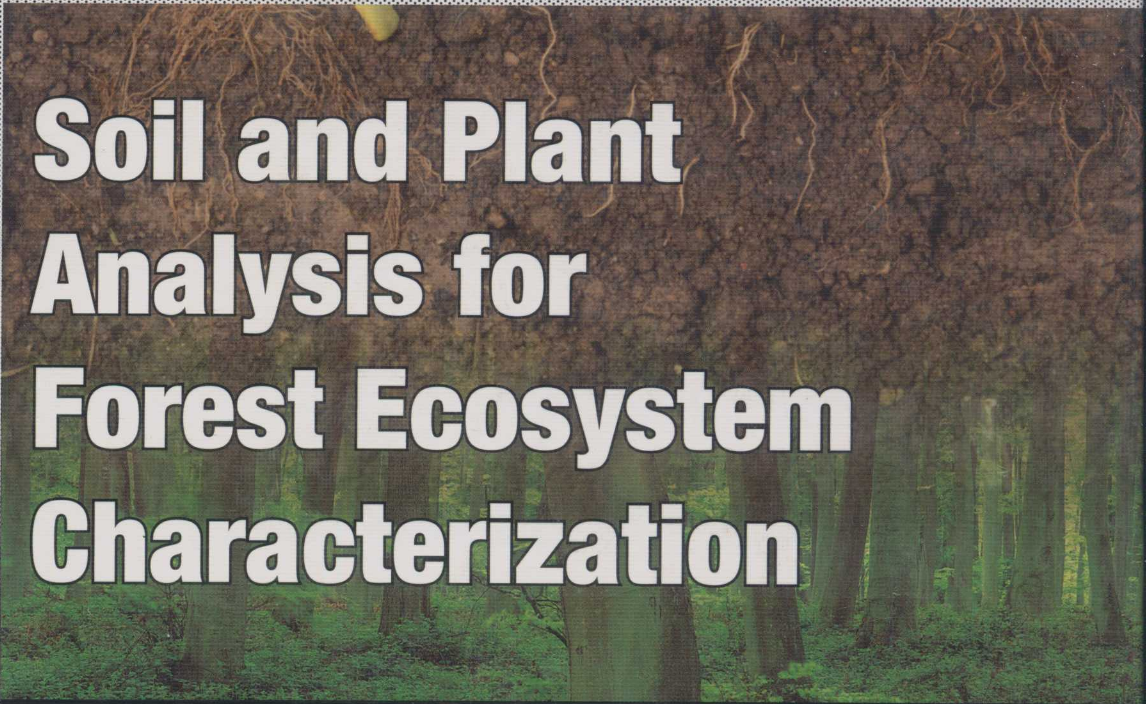
Ecosystem Science and Applications



# Soil and Plant Analysis for Forest Ecosystem Characterization

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# Acronyms

| | |
|---|---|
| ADP | Adenosine Diphosphate |
| AFDM | Ash-free Dry Mass |
| AM fungi | Arbuscular Mycorrhizal Fungi |
| ATGC | nucleotide bases: Adenine, Thymine, Guanine, Cytosine |
| ATP | Adenosine Triphosphate |
| BLAST | Basic Local Alignment Search Tool program for finding regions of local similarity between sequences |
| CB | Citrate-Bicarbonate |
| CDB | Citrate-Dithionite-Bicarbonate |
| cDNA | complementary DNA (cDNA) is DNA synthesized from a messenger RNA (mRNA) template in a reaction catalyzed by the enzymes reverse transcriptase and DNA polymerase, and is often used to clone eukaryotic genes in prokaryotes |
| CEC | Cation exchange capacity |
| CFV | Coarse Fraction Volume (as in the $>$ 2 mm particles in the bulk soil) |
| CTAB | Cetyltrimethylammonium Bromide—a positively charged detergent |
| CV | Coefficient of Variation-statistical parameter that is the ratio of the standard deviation to the mean |
| dATP | Deoxyadenosine triphosphate (dATP)—a nucleoside triphosphate used in cells for DNA synthesis (or replication) |
| DBH | Diameter at breast height (1.3 m) of a tree |
| dCTP | Deoxycytidine triphosphate (dCTP)—a nucleoside triphosphate that contains the pyrimidine base cytosine |
| dsDNR | double stranded Deoxyribonucleic Acid (DNA) |
| DDI | Distilled De-Ionized (water) |
| DDW | Double Distilled Water |
| DEA | Dentrification Enzyme Activity |
| dGTP | Deoxyguanosine triphosphate (dGTP)—a nucleoside triphosphate, and a nucleotide precursor used in cells for DNA synthesis |
| DNA | Deoxyribonucleic Acid |
| dNTP | deoxy-nucleotide-tri phosphate—used by the DNA polymerase to add nucleotides to the elongating DNA strand (during replication). dNTP is a generic term referring to the four deoxyribonucleotide triphosphates: dATP, dCTP, dGTP and dTTP |

| | |
|---|---|
| DON | Dissolved Organic Nitrogen |
| DTPA | Diethylene Triamine Pentaacetic Acid |
| dTTP | Deoxythymidine triphosphate (dTTP)—one of the four nucleoside triphosphates that are used in the *in vivo* synthesis of DNA |
| DW | Distilled Water |
| EC | Electrical Conductivity |
| ECEC | Effective Cation Exchange Capacity |
| EDTA | Ethylene Diamine Tetraacetic Acid |
| EF-1$\alpha$ | Eukaryotic Elongation Factor (also known as EF1A) catalyzes aminoacyl-tRNA binding by the ribosome during translation |
| EM | Ectomycorrhizas or ectomycorrhizal (fungi or root) |
| EMF | Electromotive Force (or Voltage) |
| EPA | The United States Environmental Protection Agency |
| EtBr | Ethidium Bromide |
| FAA | Formalin Acetic Acid |
| FAO | Food and Agriculture Organization of the United Nations |
| FF | Forest Floor, or sometimes litter or surface organic horizon in forests |
| FID | Flame Ionization Detector |
| GC | Gas Chromatograph |
| GC-rich | Guanine-Cytosine rich means that the GC as a percentage of nitrogenous bases on a DNA molecule is high (from a possibility of four different ones also including adenine and thymine) |
| GELCOMPAR II | Software Package—a program that makes it possible to link multiple electrophoresis fingerprints to the strains or samples studied and generate multiphasic groupings and identifications with databases of unlimited size |
| I.D. | Inner Diameter |
| IC | Ion Chromatography |
| ICP | Inductively Coupled Plasma Spectroscopy |
| ID | Identification Number |
| IRGA | InfraRed Gas Analyzer system |
| ITS | Internal Transcribed Spacer refers to a piece of non-functional RNA situated between structural ribosomal RNAs (rRNA) on a common precursor transcript |
| LCI | Ligno-cellulose Index |
| L-DOPA | L-3, 4-dihydroxyphenylalanine, a chemical that is made and used as part of the normal biology of humans, some animals and plants |
| LECO CHN | LECO corporation equipment that analyzes Carbon, Hydrogen, Nitrogen (CHN) |
| LOI | Loss on Ignition |
| LR0R/LR16 | Small conserved subregion for the large subunit (LSU) rDNA gene |
| LSU rRNA | Large Sub Unit of the ribosomal ribonucleic acid (rRNA) |
| ML5/ML6 | Conserved primer sequence for PCR amplification |
| MPN | Most Probable Number |
| NIST | National Institute of Standards and Technology |

| | |
|---|---|
| Oa Horizon | Organic horizon composed of highly decomposed organic material-humus or muck (can see very few signs of the original organic tissues) (USDA Soil Taxonomy [31]) |
| OD | oven dried |
| Oe layer | Organic horizon composed of intermediate decomposed organic material-peat (can see some signs of the original organic tissues) (USDA Soil Taxonomy [31]) |
| Oi Horizon | Organic horizon composed of slightly decomposed organic material (can still see evidence of the original organic tissues) (USDA Soil Taxonomy [31]) |
| OM | Organic Matter |
| OSHA | United States Occupational Safety and Health Administration |
| PCB | Polychlorinated Biphenyl |
| PCR | Polymerase Chain Reaction |
| PDAB | p-dimethylaminobenzaldehyde |
| pH | The decimal logarithm of the reciprocal of the hydrogen ion activity in a solution |
| PHYLIP | PHYLogeny Inference Package—a free computational phylogenetics package of programs for inferring evloutionary trees |
| PLFA | PhosphoLipid ester-linked Fatty Acids |
| PVA | Polyvinyl Alcohol |
| PVC | Polyvinyl Chloride—rigid forms of PVC are frequently used in the construction of pipes or tubes |
| QA/QC | Quality Assurance/Quality Control |
| QC | Quality Control |
| QF-PCR | Quantitative Fluorescent Polymerase Chain Reaction |
| qPCR or QPCR | real-time quantitative Polymerase Chain Reaction |
| QRT-PCR | Quantitative Reverse-Transcriptase Polymerase Chain Reaction |
| rDNA | Ribosomal Deoxyribonucleic Acid |
| RFLP | Restriction Fragment Length Polymorphism |
| RNA | Ribonucleic Acid |
| RPB2 | A gene that encodes for RNA polymerase |
| RQ-PCR | See RT-PCR |
| rRNA | ribosomal ribonucleic acid is the RNA component of the ribosome and is essential for protein synthesis in all living organisms |
| %RSD | Relative Standard Deviation, or also referred to as the absolute value of the Coefficient of Variation (CV) |
| RT-PCR | Reverse Transcription Polymerase Chain Reaction (not to be confused with Real Time PCR or qPCR) |
| SI unit | The International System of Units (abbreviated SI from French: Le Système international d'unités) is the modern form of the metric system |
| SOM | Soil Organic Matter |
| T | Temperature Correction Factor |
| TCA | Trichloroacetic Acid |

| | |
|---|---|
| TCD | Thermal Conductivity Detector |
| TDR | Time-Domain Reflectometry |
| TDS | Total Dissolved Solids |
| TE | commonly used buffer solution in molecular biology consisting of Tris (pH buffer) and EDTA (cation chelate); used to solubilize DNA or RNA while protecting it from degradation |
| TKN | Total Kjeldahl Nitrogen (Total Nitrogen using the Kjeldahl method) |
| TNPP | Total Net Primary Production |
| UPGMA | Unweighted Pair Group Method with Arithmetic mean |
| USDA | United States Department of Agriculture |
| UV | Ultra-violet radiation |
| W-B | Walkley-Black carbon |
| wt. | Weight |

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