

Soil and water Lab. Analysis and Methods For soil, plant, water and fertilizer

Soil:

<u>A</u>	<u>Chemical Analysis</u>	<u>Method</u>	Days need for analysis (1 - 10 Samples)
1	Electrical conductivity (EC)	Saturation extract (Conductivity meter)	2
2	pH	Saturation extract (pH meter)	2
3	Nitrogen	Sulphuric acid digestion (Kjeldahl method)	3
4	Phosphorus	Ammonium molybdate (Olsen method) by spectrophotometer	2
5	Total Potassium	Ammonium acetate extract (Flame photometer)	2
6	Soluble Sodium	Saturation extract (Flame photometer)	2
7	Magnesium	Titration with standard EDTA solution	2
8	Chloride	Titration with standard silver nitrate solution	2
9	Total Carbonate	Volumetric method (Calcimeter)	2
10	Micro Nutrients (Cu,Fe, Mn, Zn, Cd, Ni, Co, Pb)	Extraction by standard DTPA and determined by Atomic Absorption spectrophotometer	2
11	Gypsum	Precipitation by Aceton	2
12	Carbonate and Bicarbonate	Titration with standard sulphuric acid	2
13	Cation exchange capacity (CEC)	Replacement with sodium acetate. Na determined by Flame photometer	3
14	Calcium	Titration with standard EDTA solution	2
15	Organic matter	Potassium dichromate and Ferrous sulfate (Walkely and Black method)	2
<u>B</u>	<u>Physical Analysis</u>		
1	Moisture percent	Drying oven on 105 C°	2
2	Saturation percent	Saturation paste	3

3	capacity Field	Pressure plate at 0.3 bar	5
4	Wilting point	Ceramic plate at 15 bar	5
5	Bulk density	Cylinder method	2
6	Particle density	Pycnometer method	2
7	Soil texture	Hydrometer method	2
8	Soil texture	Pipette method	4

Plant:

A **Chemical Analysis**

1	Nitrogen	Sulphuric acid digestion (Kjeldahl method)	7
2	Phosphorus	Acid mixture digestion, phosphorus determine with Ammonium vanadate - molybdate	6
3	Potassium	Acid mixture digestion (Flame photometer)	6
4	Micro Nutrients (Cu, Fe, Mn, Zn, Cd, Ni, Co, Pb)	Acid mixture digestion (Atomic Absorption spectrophotometer)	6
5	Organic matter	Dry ashing by muffle furnace heated to 550 C° for 4 hours	6
6	Sodium	Acid mixture digestion (Flame photometer)	6
7	Calcium	Acid mixture digestion (Flame photometer)	6

Water:

A **Chemical Analysis**

1	Electrical conductivity (EC)	Conductivity meter	1
2	pH	pH meter	1
3	Nitrogen	Devardas alloy (Kjeldahl method)	1
4	Phosphorus	Ammonium molybdate (Olsen method) by spectrophotometer	1

5	Potassium	Flame photometer	1
6	Sodium	Flame photometer	1
7	Magnesium	Titration with standard EDTA solution	1
8	Chloride	Titration with standard silver nitrate solution	1
9	Micro Nutrients (Cu,Fe, Mn, Zn, Cd, Ni, Co, Pb)	Atomic Absorption spectrophotometer	1
10	Carbonate and Bicarbonate	Titration with standard sulphuric acid	1
11	Calcium	Titration with standard EDTA solution	1
12	Total dissolved solids (TDS)	Coductivity meter	1

B **Physical Analysis**

1	Turbidity of water	Turbidity meter	1
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: Fertilizer

A **Chemical Analysis**

1	Nitrogen	Sulphuric acid digestion and using Kjeldahl method	3
2	Phosphorus	Acid mixture digestion, phosphorus determinde with Ammonium vanadate - molybdate	3
3	Potassium	Acid mixture digestion (Flame photometer)	3
4	Electrical conductivity (EC)	Dilution 1-5 with distilled water (Coductivity meter)	2
5	pH	Dilution 1-5 with distilled water (pH meter)	2
6	Sodium	Dilution 1-5 with distilled water (Flame photometer)	2
7	Organic mater	Dry ashing by muffle furnace heated to 550 C° for 4 hours	3