Page No.
Date

Vivekanand College Kolhapur

Project of Plant Protection

(Soil pH and Electrical Conductivity)

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To study and determine pH and Electrical conductivity of soil found in different area's

Principle -

pH - pH is negative logarithm of H^+ ion concentration. pH is the most important property which helps to identify the chemical nature in soil.
pH of soil depends on relative amount of H^+ ions and metallic action.

Soil Electrical conductivity (EC) -

It is a measure of salts in soil (Salinity of soil). It is an excellent indicator of nutrient availability and loss, soil texture and available water capacity. soil salt at certain limit is essential for soil fertility. The excess of salt in soil which stop crop growth. this is called as saline soil.

E.C is measured in unit ms/cm
(mili siemons per cm)

Page No.
Date

Determination of Soil pH and EC -

Requirement - soil sample, funnel, tripod stand, filter paper, measuring cylinder, distilled water, pH indicator, test tube stand, pipette and soil analysis kit.

Procedure -

A) Preparation of soil solution -

1) Take soil sample about 10 gm in a beaker and add about 20 - 25 ml distilled water in a beaker and stir
2) The soil sample is filter and collect the filtrate in beaker and make a final volume 100ml.
3) In this way soil solution of different soil samples are prepared separately. The soil solutions are used to check pH and E.C.)

B) Determination of pH by using universal indicator method.

1) Take filter abaut 2ml in a test tube and add 2-3 drops of indicator in a test tube.

2) Match of colour of soil solution with colour scale. The reading shows pH value of soil samples.

c) Measurement of Electrical conductivity of soil Sample.

1) Clean the conductivity cell with distilled water and dry it and connect the C and D / TDS inputs.

2) Turn the switch at conductivity position.

3) Put the conductivity cell in solution at and determine the value of EC. in ms/cm.

4) Repeat the procedure for another soil sample.

Page No.
Date

- observation Table for pH -

Sr No	soil sample	Universal indicator pH reading	Results/ Nature
1	Garden soil	5.5	Acidic
2.	Black soil	7.0	Netr Neutral
3.	clay Soil	6.5	Acidic
4	Ground soil	7.0	Neutral
5	Garden soil	6.5	Neutral
6	Pot soil	5.5	Acidic
7	Ground soil	5.5	Acidic
8	Black soil	7.5	Alkaline
9	Garden soil	7.0	Neutral
10	Pot soil	6.5	Acidic.

Page No.
Date

observation Table for EC.

Sr. No	Soil sample	Electrical conductivity m/s cm	Result
1)	Garden soil	0.12	Critical for salt and sensitive to crops.
2)	Black soil	0.19	
3)	clay soil	0.15	
4)	Ground soil	0.14	
5)	Garden soil	0.14	
6)	Pot soil	0.13	
7)	Ground soil	0.15	
8)	Black soil	0.19	
9)	Garden soil	0.17	
10)	Pot soil	0.14	

Page No.
Date

Conclusion -

1) **PH**

PH of soil varies from acidic to Alkaline as well as neutral. alkaline soil with a pH between 7.0 and 8.0 include cauliflower, cucumers, celery, cabbage, chinese cabbage, mustard greens, turnips and turnip greens and Brussels sprouts.

Some other crops grown on acid soils around the world include: rice, cassava, mango, cashew, citrus, pineapple, cowpeas, blueberries and certain grasses.

The desirable pH range for optimum plant growth varies among crops. while some crops grow best in the 6.0 to 7.0 range, other grow well under slightly acidic conditions.

2) **Electric Conductivity -**

All soil sample have averagl e.c. between 0.8 to 1.6 which is critical for salt and sensitive to crops.