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Experiment No 2: Determination of soil pH

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Theory

The soil pH is the negative logarithm of the active hydrogen ion (H^+) conc. in the soil solution. It is the measure of soil salinity, acidity or neutrality. It is a very crucial estimation for soils, since soil pH influences to a great extent on the availability of nutrients to crops. It also influences microbial population in soils. Most nutrients are available to the plants in the pH range of 5.5 to 6.5.

Apparatus

pH meter

Beaker

Glass rod

Reagent

Buffer solutions of pH 4, 7 and 9.2



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Procedure

Calibrate the pH meter, using 3 buffer solutions, one should be the buffer with neutral pH (7.0) and the other should be chosen based on the range of pH in the soil. Take the buffer solution in the beaker. Insert the electrode alternately in the beakers containing 2 buffer solutions and adjust the pH. The instrument indicating pH as per the buffers is ready to test the samples.

Weigh 10.0g of soil sample into 50 or beaker; add 25 ml of distilled water.

Thoroughly stir for 10 second using a glass rod. Record the pH on the calibrated pH meter.



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Table 2.1: Based on soil pH values, following types of soil reactions are distinguished:

PH Range Soil Reaction Rating

<3.5 Extremely acid

3.5-4.0 Very strongly acid

4.0-5.0 Strongly acid

5.0-6.0 Moderately acid

6.0-6.5 Slightly acid

6.6-7.4 Neutral (comfortable for most crops)

7.5-8.0 Slightly alkaline

8.0-8.5 Moderately alkaline

>8.5 Strongly alkaline



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The acidic soils need to be limed before they can be put to normal agricultural production. The alkali soils need to be treated with gypsum to remove the excessive content of sodium.

Observation: Students must compare your results with above charts and write proper conclusion in remark area like pH value and nutrient availability.

Sample No	pH value	Remark
1.		
2.		
3.		
4.		