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SCHOOL OF  
AGRICULTURE

ASAC 1101 (2-1-0)

# FUNDAMENTALS OF SOIL SCIENCE

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PRACTICAL MANUAL

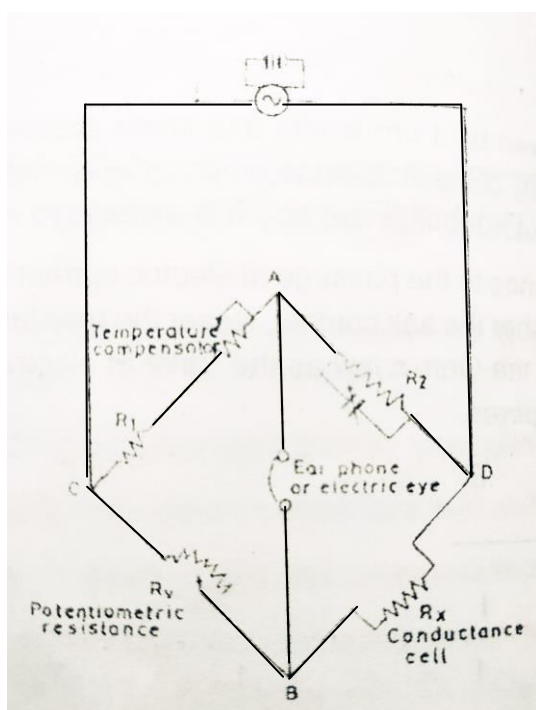


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MSSSoA

**EX No.9****DETERMINATION OF ELECTRICAL CONDUCTIVITY (EC) OF SOIL****Date:****Aim:** To determine electrical conductivity ( $\text{dSm}^{-1}$ ) of given soil water extract.**Principle:**

The current flowing between two fixed electrodes is directly proportional to the total soluble salts present in the soil extract or supernatant solution. It is expressed as milli mhos/cm or  $\text{dS/m}$ , and it is reciprocal of ohms.



$$IR_X/IR_V = R_2/R_1$$

$$R_X = R_2 \cdot R_V / R_1$$

**Apparatus:**

Beaker, E.C. meter, glass rod, measuring cylinder, balance, wash bottle.

**Reagents:** 0.1 M KCl (1.41  $\text{dS/m}$ ), Saturated  $\text{CaSO}_4$  (2.62  $\text{dS/m}$ )

**Procedure:****Step i: Operation of EC meter**

1. Switch on the instrument and wait for 15 minutes to warm up.
2. EC meter consists of range switch, dial knob, temperature adjustment knob.
3. Adjust the temperature knob at room temperature.
4. Standardize/calibrate the instrument with known standard.

**Step ii: Measuring EC of a sample**

1. Weigh 10 g of soil and transfer into a 100 mL beaker.
2. Add 25 mL of distilled water and stir well with glass rod for 15 minutes (1:2.5 soil: water extract).
3. Dip the conductance cell in clear soil water extract and note down the reading.

**Rating of soil EC:**

EC (dS/m)	Description
< 1.0	Normal for all crops
1-2	Critical for germination
2-3	Injurious for salt sensitive crops
>3	Injurious to most of the crops

**Conversion factors:**

- TDS (m.eq/L) = EC (dS/m) ×10
- TDS (ppm) = EC (dS/m) ×640
- TDS (%) = EC (dS/m) ×0.064
- Osmotic pressure (bars) = EC (dS/m) ×0.36

**Result :**

The given soil sample contains,

EC (dS/m)	
TDS (m.eq/L)	
TDS (ppm)	
TDS (%)	
Osmotic pressure (bars)	

**Inference:**

The given soil sample is.....