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SSAC-221

Problematic Soils and their Management

2(1+1)

Theory

Soil quality and health, distribution of Waste land and problem soils in different agro ecosystem of India. Their categorization based on properties. Reclamation and management of Saline and sodic soils, Acid soils, Acid Sulphate soils, highly and low permeable soils. Remote sensing and GIS in diagnosis and management of problem soils. Bio remediation of soils through multipurpose trees (MPTs) , land capability and suitability classification. Irrigation water – quality and standards, utilization of saline water in agriculture.

Practical

- Characterization of acid, acid sulfate, salt-affected and calcareous soils.
- Determination of cations (Na^+ , K^+ , Ca^{++} and Mg^{++}) in irrigation water and soil samples.
- Determination of anions (Cl^- , SO_4^{--} , CO_3^{--} and HCO_3^-) in irrigation waters and soil samples.
- Determination of CaCO_3 in calcareous soils.
- Lime requirements of acid soil and gypsum requirements of sodic soil. □ Computation of SAR and RSC of irrigation water.

Lecture Schedule: Theory

S.N.	Topic	No. of lectures
1.	Soil quality-Physical, Chemical and Biological indicators and major factors affecting the soil quality. Soil health and Soil health card , its importance to farmer and crop productivity	2
2.	Distribution of Waste land and problem soils in different agro-ecosystem of India.	1
3.	Categorization of Saline and sodic soils based on properties and its reclamation and management	2
4.	Categorization of acid and acid sulphate soils based on properties and its reclamation and management	2
5.	Highly and low permeable soils	1
6.	Remote sensing and GIS in diagnosis and management of problem soils	2
7.	Bio remediation of soils through multipurpose trees (MPTs),	1

8.	Land capability and land suitability classification	1
9.	Irrigation water – quality, criteria and classification and standards	2
10.	Management and Utilization of saline water for irrigation	2

Lecture Schedule :Practical

S.N.	Topic	No. of lectures
1.	Characterization of acid soils	1
2.	Characterization of salt-affected soils	1
3.	Characterization of calcareous soils	1
4.	Determination of Ca^{++} and Mg^{++} in soil	1
5.	Determination of Ca^{++} and Mg^{++} in ground water	1
6.	Determination of Potassium in ground water and Soil	1
7.	Determination of sodium in irrigation water and Soil	1
8.	Determination of CaCO_3 in calcareous soil	1
9.	Determination of CO_3^{--} and HCO_3^- in irrigation waters	1
10.	Determination of CO_3^{--} and HCO_3^- in soil	1
11.	Determination of chloride in irrigation waters and in soil	1
12.	Determination of sulphate (SO_4^-) in irrigation waters	1
13.	Determination of sulphate (SO_4^-) in soil	1
14.	Determination of gypsum requirement of sodic soil	1
15.	Determination of lime requirement of acid soil	1
16.	Computation of SAR and RSC of irrigation water	1

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