

3. SDCA-03: Soil testing

Total Hours: 30

Course Objectives: The basic objective of the soil-testing program is to give farmers a service leading to better and more economic use of fertilizers and better soil management practices for increasing agricultural production.

Course Outcome:

1. Collect samples from agricultural fields and prepare samples for soil testing following safety precautions.
2. Perform soil testing to identify the different components in the soil.
3. Calculate nutrients from different fertilizer sources, recommend appropriate fertilizer, quantum of dose and distribution of fertilizer based on the soil properties.
4. Perform application of fertilizers for various crops.

Syllabus -

Unit I

Introduction to Soil Formation, Types of Soils & Basic Concepts about Physical, chemical, and biological properties of different soil types; Identification of nutrient deficiency Symptoms in Crops & Fertilizer recommendations
Introductory remarks about various soil testing methods and the Importance of Soil Testing and Analyses

Unit II

Criteria for selection of field, Method of Soil Sample collection, Methods of soil sample processing, Precautions during soil collection & processing, Preservation, labeling and Storage of soil samples.

Study of Laboratory Setup, Laboratory Layout, built up area, Laboratory requirements and working pattern of a soil testing Lab.

Unit III

Study of Instruments: Brief study of instruments: pH Meter, Conductivity meter, spectrometer, UV-Spectrophotometer, (Calibration, Instrumentation, applications only) use of soil testing kits etc.; Kjeldahl's Assembly for determination of nitrogen.

Unit IV

Determination of pH & Electrical Conductivity of Soil Samples using pH/Electrical Conductivity meter; Determination of Organic Carbon; Total & available Nitrogen, Phosphorus, Potassium & micronutrients from soil samples.

Determination of lime requirement of soil; Determination of Gypsum requirement of Soil
Preparation of Soil analysis and test report; Preparation of soil test summaries and fertility maps.

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