Soil Testing and Analysis

Lectures to be Delivered : 30 Max. Marks : 25

Unit – I : Importance of Soil Testing and Analysis **8 Hours**

Unit – II :

Sample Collection and Processing Purpose of Soil testing and analysis, selection of field, Method of Soil Sample collection Methods of soil sample processing, precautions during soil collection & processing, Preservation labelling and Storage of soil samples, various types of boys used for collection. **12 Hours**

Unit – III : **Study of Instruments:**

Brief study of instruments : PH Meter, Conductivity meter, spectrometer, UV-Spectrophotometer, (Calibration, Instrumentation, applications only) use of soil testing kit and mobile soil testing van. Kjeldahl's Assembly for determination of nitrogen. **8 Hours**

Unit – IV : **Study of Laboratory Setup**

Laboratory Layout, Built up area, Laboratory requirements, working pattern, budget requirement, trained manpower, various funding schemes and agencies. **10 Hours**

Unit – V : **Soil Testing Methods**

P^H measurement, Estimation Of Organic Carbon, Estimation Of Nitrogen, Estimation Of Phosphorous, Estimation Of Potash

HEAD, CHEMISTRY DEPARTMEN
A.C. COLLEGE, GUNTUR

Books Recommended (Books suggested for Reading) :

1. Soil Sampling, Preparation and analysis, Marcell Dekker, Inc, New York.
2. Soil Sampling and methods of analysis, carter M.R. and E.G.Gregorich, 2007, 2nd Ed..
3. Methods of soil analysis, Part, American society of Agronomy Inc., Kuete, A.Et.at., 1986.

Soil Testing Analysis 2018 —

Y. Keerthana '908' (Y18)

ANDHRA CHRISTIAN COLLEGE — GUNTUR.S

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1. **PH of soil** :- PH is measured commonly by using glass electrode PH meter with calomel reference electrode. Most digital PH meters have single electrode assembly. The instrument being a potentiometer the PH scale has to be calibrated before use with buffer solutions of known PH values.

2. **Determination of organic carbon (soil)** :-

one gram of soil sample is taken in a test tube, to this 2ml of 1N of $K_2Cr_2O_7$ and 2ml of Conc. H_2SO_4 is added and shaken well. this is kept for about 30 min and allowed for complete oxidation of sample. Then 5ml of distilled water is added and the colour developed is noted as LY, Y, O, OG, DBG

3. **Estimation of Nitrogen** :-

Measure 5cc of soil in the soil measuring tube and transfer into 100ml conical flask. Add 25ml of Nitrogen reagent (50% H_2SO_4 into the soil and shake for 5-10min. Add a pinch of decolouriser mixture and again mix well. Then filter into colour developing bottle & add 2 drops of Nitrogen reagent and mix well. wait 1-2 min for colour to develop and it formed is compared with Nitrogen colour chart.

4. Estimation of phosphorous :-

Measure 5ml of soil in the soil measuring tube and transfer into 100ml conical flask. Add 25 ml of phorphorous reagent into the soil and then shake for 5-10 min. Add a pinch of decolouriser into the soil mixture and again mix well. Then filter into colour developing bottle by using a funnel and filter paper.

7 Steps in soil testing :-

(i) Collection of soil samples
(ii) Chemical analysis of sample
(iii) Calibration and interpretation of the results of chemical analysis
(iv) Recommendations.