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SSAC-311 Manures, Fertilizers and Soil Fertility Management 3(2+1)

Theory

Introduction and importance of organic manures, properties and methods of preparation of bulky and concentrated manures. Green/leaf manuring. Soil organic matter , composition, properties and influences of soil fertility, Humic substances – nature and properties.

Chemical fertilizers: classification, specification and properties of major nitrogenous, phosphatic, potassic fertilizers, secondary & micronutrient fertilizers, Complex fertilizers, nano fertilizers Soil amendments, Fertilizer Storage, Fertilizer Control Order.

History of soil fertility and plant nutrition. criteria of essentiality. Forms of nutrients in soil, role, deficiency and toxicity symptoms of essential plant nutrients, Mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants. Soil fertility evaluation, Soil testing. Critical levels of different nutrients in soil. Indicator plants. Methods of fertilizer recommendations to crops. Factor influencing nutrient use efficiency (NUE), Integrated nutrient management.

Practical

Introduction of analytical instruments and their principles, Estimation of soil organic carbon, Estimation of available N in soils. Estimation of soil extractable P in soils. Estimation of exchangeable K; Ca and Mg in soils . Estimation of soil extractable S in soils.. Estimation of DTPA extractable Zn in soils. Estimation of N in plants. Estimation of P in plants. Estimation of K in plants. Estimation of S in plants.

Lecture Schedule - Theory

S. N.	Topic	No. of lectures
1.	Introduction and importance of organic manures	1
2.	Classification of organic manures	1
3.	Properties and methods of preparation of bulky manures.	2
4.	Properties and methods of preparation of concentrated manures.	2
5.	Green/leaf manuring.	1

6.	Soil organic matter , composition, properties and influences of on soil fertility,	2
7.	Humic substances – nature and properties.	1
8.	Chemical fertilizers: classification,	1
9.	Major Nitrogenous fertilizers (Urea, Ammonium sulphate, CAN) - Chemistry of manufacturing and fate in soil	2
10.	Major Phosphatic fertilizers(SSP, TSP and DAP)- Chemistry of manufacturing and fate in soil	2
11.	Major Potassic fertilizers (MOP and Potassium sulphate) - Chemistry of manufacturing and fate in soil	1
12.	Secondary & micronutrient fertilizers sources and application	1
13.	Complex fertilizers, nano fertilizers sources and application	1
14.	Soil amendments, Fertilizer Storage, Fertilizer Control Order.	2
15.	History of soil fertility and plant nutrition	1
16.	Criteria of essentiality. Forms of nutrients in soil,	1
17.	role, deficiency and toxicity symptoms of essential plant nutrients,	2
18.	Mechanisms of nutrient transport to plants	1
19.	Factors affecting nutrient availability to plants	1
20.	Soil fertility evaluation	2
21.	Soil testing. Critical levels of different nutrients in soil.	1
22.	Indicator plants. Methods of fertilizer recommendations to crops.	1
23.	Factor influencing nutrient use efficiency (NUE),	1
24.	Integrated nutrient management.	1

Lecture Schedule: Practical

S.N.	Topic	No. of lectures
1.	Introduction of analytical instruments and their principles	2
2.	Determination of organic matter in soil	1
3.	Determination of available nitrogen in soil	1
4.	Determination of soil extractable phosphorus	2
5.	Determination of exchangeable potassium in soil	1
6.	Determination of soil extractable sulphur in soil	2
7.	Determination of available DTPA extractable -zinc in soil	1
8.	Rapid plant tissue test- N, P and K	3
9.	Estimation of N,P, K and S in plant	3

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