



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Agriculture

Choice Based Credit System (CBCS) Scheme in the light of NEP-2020

Under-Graduate, Multi- Inter Disciplinary (Generic Elective Course)

AGGE301: Soil Health and Plant Nutrition (4+0=4)

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
AGGE301	Soil Health and Plant Nutrition	60	20	20	00	00	4	0	0

1. **Legends:** L - Lecture; P Practical; C-Credit.

2. ***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / participation in class.

Course Objective:

1. Understand soil formation, physical, chemical, and biological properties.
2. Learn plant nutrient roles, uptake mechanisms, and deficiency symptoms.
3. Master soil testing, plant analysis, and fertilizer recommendation techniques.
4. Evaluate the role of soil organic matter and microorganisms in soil health.
5. Develop strategies to improve Nutrient Use Efficiency (NUE) and soil sustainability.

Course Outcomes: After successful completion of the course, students will be able to:

1. Explain soil physical/chemical properties and classify major Indian soils.
2. Diagnose nutrient deficiencies and toxicity symptoms in plants.
3. Perform soil testing and calculate balanced fertilizer recommendations.
4. Assess soil biological activity and its impact on soil health.
5. Apply efficient fertilizer application methods and sustainable INM practices.

Unit- I:

Soil as a natural body, Pedological and edaphological concepts of soil; Soil genesis: soil forming rocks and minerals; weathering, processes and factors of soil formation; Soil profile, components of soil, Effect of Soil physical properties on plant growth, soils of India.

Unit -II:

Soil reaction –pH, soil acidity and alkalinity, buffering, effect of pH on nutrient availability; soil colloids, ion exchange, cation exchange capacity, base saturation

Unit- III:

Soil Health and quality, soil sustainability, Soil organic matter: composition, properties and its influence on soil properties, soil organism: macro and microorganisms, their beneficial and harmful effects.

Unit- IV:

Soil fertility and soil productivity. Criteria of essentiality. Forms of nutrients uptake by plants. Role, deficiency and toxicity symptoms of essential plant nutrients, Mechanisms of nutrient transport to plants.

Unit- V:

Transformation of Major Nutrient in soil. Soil fertility evaluation, Soil testing. Critical levels of different



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nutrients in soil. Forms of nutrients in soil, plant analysis, :Indicator plants. Methods of fertilizer recommendations to crops. Factor influencing nutrient use efficiency (NUE), methods of application of fertilizer, Fertilizers and organic manure, Biofertilizers, Integrated nutrient management.

Suggested Readings

1. Soil Fertility and Nutrient Management (2011) by S.S.Singh, Kalyani Publishers, New, Delhi
2. FAO: Fertilizer and their use 4 TH Ed.
3. Introductory of Soil Science by D.K. Das, Kalyani Publishers, New, Delhi

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Shri Vaishnav
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