



SOIL FERTILITY AND FERTILIZERS

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IIT Kharagpur

INTENDED AUDIENCE : Students Of Agricultural Engineering, Agriculture And Allied Science

INDUSTRY SUPPORT : Soil and crop testing services, Soil remote sensing solution services, AI-based agricultural startups

COURSE OUTLINE :

Soil fertility indicates the ability of soil to sustain plant growth and optimize crop yield. This course aims to provide a comprehensive knowledge of soil fertility, plant nutrition, fertilizers, and nutrient management so that students can: Explain the influence of soil attributes and their interactions on plant nutrient availability. Identify plant nutrition-soil fertility problems and recommend proper corrective action. Gain a comprehensive knowledge of fertilizers and their properties. Gain knowledge of organic nutrient management, and identify soil and nutrient management practices that maximize productivity and profitability while enhancing the soil productivity and quality of the environment.

ABOUT INSTRUCTOR :

Prof. Somsubhra Chakraborty is currently serving as an Assistant Professor (Soil Science) at the Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur. He was awarded various prestigious fellowships including the Australia Awards Fellowship from the Australian Department of Foreign Affairs and Trade. He did his undergraduate and M.Sc degrees from BCKV and PAU in India, respectively, and PhD degree in Agronomy (Soil Science emphasis) from Louisiana State University, USA. He started his career as a post-doctoral researcher at West Virginia University, USA. He joined IITKgp as faculty in 2016. His research interest is the use of proximal and non-invasive sensors with machine learning for soil management. He has around 85 international journal publications. He is currently serving as the member of the editorial board of Geoderma, the global journal of soil science.

COURSE PLAN :

Week 1: Importance of soil nutrient management and basic soil-plant relationship

Week 2: Soil N for plant nutrition

Week 3: Soil P and k for plant nutrition

Week 4: Soil secondary nutrients and their role in plant nutrition

Week 5: Soil micronutrients and their role in plant nutrition

Week 6: Soil testing and soil fertility evaluation methods

Week 7: Soil quality and health, and land capability classification

Week 8: Manufacturing, properties, and fate of n, p, and k fertilizers

Week 9: Fertilizer quality control, fertilizer adulteration, and fertilizer testing

Week 10: Management of fertilizers and manures in soil

Week 11: Fertilizer recommendation approaches and integrated plant nutrient management

Week 12: Agricultural productivity and environmental quality