

Key Areas

- Food Process and Post-Harvest Technology
- Land and Water Resource Management
- Farm Machinery and Mechanization
- Computer Science and Information Technology
- Civil and Environmental Engineering
- Electrical Energy System and Management
- Mechanical Engineering
- Electronics and Communication Engineering
- Dairy Technology
- Biotechnology
- Bioinformatics
- Biochemistry and Biochemical Engineering
- Microbiology and Fermentation Technology
- Plant Tissue Culture
- Commerce and Management
- Crop Production
- Horticulture
- Insect, Pest and Disease Management
- Crop Improvement and Seed Technology
- Agricultural Extension and Communication
- Agribusiness Management
- Pharmaceutical Sciences
- Medical Laboratory Technology
- Public Health
- Home Science and Women's Development
- Forestry and Natural Resource Management
- Animal Science and Management
- Forensic Science
- Industrial Chemistry
- Teacher Education
- Film and Mass Communication

Organic Farming for Sustainable Livelihoods

Introduction:

Agriculture is the mainstay of economy of South Asian countries. About 20 to 41 per cent of national output and 44 to 73 per cent employment are contributed by this sector in various countries in the region. Sustainability must become relevant for farming community and if the fundamental necessity of self sufficiency, particularly of the small holder farmers' household are fulfilled then their socio-economic status will be resilient from that of a poverty-ridden livelihood. Since there is decline in the total factor productivity (TFP) for several major food crops in recent years, a change in the current trend of input-dependent modern agriculture is the most essential need of the hour. Continuous and increased/indiscriminate use of sole chemical inputs lead to several harmful effects on the soil environment, ground and surface water and even atmospheric pollution, reducing the productivity of the soil by affecting soil health in terms of physical, chemical and biological properties.

Programme Description:

This training programme will provide hands on experience both conceptual and practical. It will be delivered through lectures, field practical sessions and interactive visits to successful practitioners, entailing skill impartation, particularly at the SHUATS Model Organic Farm (**SMOF**). The **SMOF** (2 hectares/5 acres area) demonstrates an integration of over 75 species under multiple cropping systems with immense diversity, which depicts both food and nutrition security, and is being certified on an annual basis by Lacon Quality Certification (P) Ltd. [Accreditation No. NPOP/NAB/006, Ministry of Commerce, Government of India], the current validity till May 2016 is for the 7th year consecutively.

Programme Participants:

This programme is designed for participants or personnel with life sciences, particularly agriculture background from academia, research, development and extension.

Objectives:

The main objectives of the programme are as follows:

- To understand the role organic farming for livelihoods
- To appraise soil and water management under organic production system
- To become skilled at different methods toward sustainable eco-intensification
- To learn protocols for crop production and protection
- To gain knowledge towards implementation of certification of organic systems

Curriculum:

The study programme includes the following aspects:

- Introduction, scope, relevance and classification of organic systems
- Buffer zone and biodiversity for vertical and horizontal intensification
- Principles and practices of soil and water management as per organic certification.
- Crop nutrient management soil health and productivity
- Plant protection approaches.
- Economic analysis.
- Organic certification, process of documentation, formalities and execution for organic certification.

Duration: 2 Weeks

Date: 25th November, 2024 – 8th December, 2024

Programme coordinator: Dr. Joy Dawson

Directorate of International Education and Training

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- Remote-sensing and GIS

WATER QUALITY ASSESSMENT & MANAGEMENT**Introduction**

Remote sensing techniques can be used to monitor water quality parameters (i.e., turbidity, chlorophyll, and temperature). Optical and thermal sensors on boats, aircraft, and satellites provide both spatial and temporal information needed to monitor changes in water quality parameters for developing management practices to improve water quality. Recent and planned launches of satellites with improved spectral and spatial resolution sensors should lead to greater use of remote sensing techniques to assess and monitor water quality parameters. Integration of remotely sensed data, GPS, and GIS technologies provides a valuable tool for monitoring and assessing waterways. Remotely sensed data can be used to create a permanent geographically located database to provide a baseline for future comparisons. The integrated use of remotely sensed data, GPS, and GIS will enable consultants and natural resource managers to develop management plans for a variety of natural resource management applications.

Programme Participants

The course is targeted at professionals who require knowledge and skills on assessing water quality of large water bodies and rivers. Participants are welcome from a broad range of organizations including physical planning, institutions, professionals and private GIS and RS related firms.

Objectives

The objective of this training is to review the use of remote sensing techniques for monitoring and assessing water quality.

- To be acquainted with the actual and potential applications for assessing water resources and for monitoring water quality, limitations in spectral and spatial resolution of current sensors on satellites currently restrict the wide application of satellite data for monitoring water quality.
- Monitor, assess and collect data of water samples for subsequent laboratory analyses.
- Principles of remote sensing related to water quality assessment.
- Monitoring the concentrations of chlorophyll.
- Quantify the biological activity using thermal quality of water.

Curriculum

- Insitu Monitoring, assessing and data collecting of water samples for subsequent laboratory analyses.
- Understanding principles of remote sensing related to water quality assessment, eutrication and quantification of biological activity in water bodies.

Duration: 2 Weeks

Date: 25th November, 2024 – 8th December, 2024

Programme coordinator: Dr. D. M. Denis

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Data Analytics

Introduction

Data Analysis a branch of Artificial Intelligence and computer science that focuses on the use of systematically applying statistical and logical techniques to describe, illustrate, condense, and evaluate data. It's a critical step in understanding trends, patterns, and relationships within data sets and is used across various industries to make informed decisions.

Programme Description

This course is designed to provide a comprehensive introduction to data analysis, equipping students with the essential skills and knowledge needed to collect, clean, analyze, and interpret data. Whether you're pursuing a career in data science, business analytics, or any field where data plays a critical role, this course will lay a strong foundation for understanding and applying data analysis techniques.

Programme Participant

This programme is designed for participants of following like Software developers, Business Analyst, who want to learn and become a Data Analyst to enhance their carrier in the domain of Data Analytics

Objectives

Course Objectives: By the end of this course, students will be able to:

- Understand the fundamentals of data analysis and its importance in various industries.
 - Collect and prepare data for analysis using various tools and techniques.
 - Perform exploratory data analysis (EDA) to discover patterns, relationships, and insights.
 - Apply basic statistical methods to analyze data and test hypotheses.
 - Use data visualization techniques to effectively communicate findings.
 - Gain proficiency in using data analysis tools such as Excel, SQL, Python.
 - Interpret and present analytical results to support decision-making.
- Curriculum
- Introduction to Data Analysis
 - Data Collection and Preparation
 - Exploratory Data Analysis (EDA)
 - Statistical Analysis
 - Data Visualization using Excel, Python, Tableau

Duration: 2 Weeks

Date: 25th November, 2024 – 8th December, 2024

Programme coordinator: Dr. Anchit S. Dhar

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CROP HEALTH MONITORING AND ASSESSMENT USING GIS AND REMOTE SENSING**Introduction**

Agriculture production is severely hampered by the stresses induced in crops due to various environmental & management related factors. Conventional methods which include field visits on a regular basis, testing various growth parameters of crops, etc. used for monitoring crops can be labour intensive, time consuming and cumbersome. Remote Sensing techniques along with geospatial tools provides an excellent mean to monitor crop health without much of the logistics as in the case of conventional methods. Through Remote Sensing stresses can be detected in a timely manner and appropriate treatments can be applied thereby avoiding/minimizing the adverse impact of such stresses on the yield/production. Additionally, Remote Sensing and GIS techniques can also be used in yield estimation/prediction.

Programme Description

This programme is intended to professionally train the participants in using Remote Sensing and GIS techniques for monitoring and assessing crop growth in time and space. Participants will also learn to utilize remote sensing techniques for estimating and predicting yield of the crops. A series of expert lectures integrated with relevant practicals will equip the participants with hands on experience in applying geospatial techniques in agriculture.

Programme Participants

This programme is designed for participants with agriculture background from academia and industry. Additionally, participants from farming community, insurance agencies and policy makers can also be benefitted from this programme.

Objectives

The major objectives of the programme includes:

- To understand the concepts of remote sensing in crop health monitoring.
- To learn the various
- To learn and apply the various remote sensing & GIS techniques for crop health monitoring and yield estimation/prediction.

Curriculum

The programme will include the following topics:

- Introduction to the concepts of remote sensing.
- Fundamentals of GIS.
- Introduction to image processing & GIS softwares.
- Image processing and interpretation.
- Development of various remotely sensed vegetation indices.
- Application of geospatial tools and techniques in crop health monitoring & assessment.

Duration: 2 Weeks

Date: 25th November, 2024 – 8th December, 2024

Programme coordinator: Dr. Deepak Lal

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MICROBIAL QUALITY ASSESSMENT OF FOOD AND DAIRY PRODUCTS

Introduction

Food and Microorganisms are inseparable, as microbes go into the production phase of food and are detrimental to foodstuff when they cause food spoilage. Food also has a long association with the transmission of disease. According to World Health Organization, food-borne disease is perhaps the most widespread health problem in the contemporary world and an important cause of reduced economic productivity. Outbreaks of food poisoning involve a number of people and a common source, and are consequently more intensively investigated than the numerous sporadic cases that occur. Another aspect of paramount importance regarding food science is the spoilage that can lead to heavy economic loss to the country. Microbial spoilage is very sudden, reflecting the exponential nature of growth as is its metabolism. Once the threshold of spoilage is reached, maintaining the quality of food as acceptable to the consumer is difficult and the food becomes spoilt. Spoilage microflora of any food increasingly depends upon the contaminating flora which is influenced by various factors both external and internal to the food. A thorough knowledge about the possible contaminants of any food can pave the way to develop predictive preservation methods to increase the shelf-life of food.

Program Description

Quality assessment of food has attained greater heights in applied aspects where quality has to be maintained in terms of microbiological assurance. So this training module will focus on various quality assessment aspects of food and dairy products.

Programme Participants

Personnel employed or require a quality control job in food industries of national and international repute and star graded hotels needs to be particular about this training which focuses on the microbiological criteria of food as well as the hygienic aspects.

Objectives

The training module is designed to train the quality assurance personnel in the food and dairy industry with the following objectives:

- The study the various quality assessment techniques of food and dairy products
- To assess the efficiency of cleaning techniques in food industry

Curriculum

The curriculum for this training module comprise of:

- Knowledge of industrially important microbes
- Spoilage, pathogenic and beneficial microbes
- Assessment of food quality
- Aspects of microbial quality control

Duration: 2 Weeks

Date: 25th November, 2024 – 8th December, 2024

Programme coordinator: Prof. (Dr.) Rubina Lawrence

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PROTECTED CULTIVATION OF HIGH VALUE VEGETABLE AND ORNAMENTAL CROPS

Introduction

This is very important for horticulture to work on the aspects like production technology on off-season cultivation of horticulture crops, various structures and refinement of designs, intervention of innovative techniques like drip irrigation, hydroponics and use of super absorbents etc. for success of protected cultivation system. Identifying new options for pest management, without synthetic pesticide, studies of food safety in the informal food sector of developing country, to improve quality and safety in a vital for employment of poor people. With increasing population, urbanization and continues depletion of natural recourses, there has been shrinking of land, depletion water and other related recourses in agriculture.

Programme Description

This training programme will provide knowledge about different green house structures, plant growing structures or containers used in green house production, drip irrigation and other type of irrigation systems, Fertigation systems and commercial cultivation of different vegetable and ornamental crops.

Programme Participants

This programme is conducted for participants with life science background from both academia as well as industry.

Objectives

- Raising quality planting material on commercial scale
- Cultivation of commercial flowers and foliage plants
- Drip irrigation and Fertigation systems in green house cultivation
- Cultivation different vegetable in green house
- Cooling and heating systems in green house
- Different media and containers used in green house

Curriculum

- Study of different types of poly houses
- Commercial cultivation of different off-season vegetables
Commercial cultivation of different flower and foliage crops
Pest and disease management in green house
- Management of Fertigation in green houses

Duration: 2 Weeks

Date: 25th November, 2024 – 8th December, 2024

Programme coordinator: Dr. Devi Singh

Directorate of International Education and Training

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