# *AI & ML in Agriculture Training Program*

**Overview**

The AI in Agriculture Training Program is designed to help participants apply Artificial Intelligence technologies to enhance efficiency, productivity, and sustainability in modern farming. Ideal for students, agri-professionals, data scientists, and engineers, the program focuses on solving real-world agricultural challenges using AI.

**Objectives**

Participants gain theoretical and practical skills in machine learning, computer vision, and data analytics to implement AI-driven solutions in agriculture.

**Key Modules**

- Introduction to AI and ML algorithms: decision trees, regression, classification
- Applications: crop disease detection, yield prediction, livestock monitoring
- Image processing using OpenCV, TensorFlow, PyTorch for plant health analysis
- Data collection using IoT sensors.
- Predictive analytics for weather forecasting, soil health, and market trends
- Development of AI prototypes: smart irrigation, disease detection apps, crop monitoring systems

**Outcomes**

1. Understand AI concepts and agricultural applications
2. Build ML models for yield and disease prediction
3. Apply computer vision for plant analysis
4. Automate farming tasks using AI
5. Prepare for careers in AgriTech and AI-driven agriculture

# Curriculum:

1) Introduction to Machine Learning & Agricultural Applications
2) Introduction to Python Libraries for ML & DL
3) Linear Models for Crop Prediction
4) Classification for Pest Detection such as Decision Trees and Random Forests
5) Unsupervised Learning for Soil and Crop Health : Clustering & Dimensionality Reduction such as PCA and Feature Selection approaches
6) Intermediate Machine Learning Models & Techniques in Agriculture
7) Time Series Forecasting for Crop Yield and Weather Prediction such as
8) Neural Networks for Image Classification in Precision Farming Models such as CNN
9) Natural Language Processing (NLP) for Agricultural Insights
10) Model Deployment and Real-World Application in Agriculture
11) Project Work