2nd Visit Report

Project Title: Sustainable Fertilizer Usage Optimizer for HigherYield
Date of Visit: 21st March 2025
Location: Agriculture College Tardi, Maharashtra, India
Coordinates: 21.276192°N, 75.069455°E
Team Members: 1. Vrushali Mali

2.Neha Gavali

3.Unnati Suryawanshi

4.Chetan Patil

Expert Consulted: Dr. Nitin Misal

1. Introduction

The purpose of this visit was to collect dataset samples for the Shirpur region and understand the key parameters affecting fertilizer prediction for different crops. Our objective is to develop a machine-learning model for optimizing fertilizer usage based on soil health, climatic conditions, and crop requirements.

2. Key Discussions with Expert

During the visit, we had a detailed discussion with **Dr. Nitin Misal**, sir who provided insights into essential components influencing crop growth and fertilizer needs. The following key factors were discussed:

- **Soil Testing Parameters:**

  Understanding the role of pH levels, organic matter, micronutrients, and macronutrients in soil fertility.

- **Nutrient Requirements:**

  Importance of Nitrogen (N), Phosphorus (P), and Potassium (K) for different crops and their impact on yield.

- **Weather Conditions:**

  How factors like temperature, humidity, and rainfall influence soil nutrient absorption.

- **Existing Fertilizer Practices:**

  Commonly used fertilizers and their effects on crop productivity and soil health.

3. Dataset Collection Strategy

To ensure accuracy in fertilizer prediction, we planned a structured dataset collection method that includes:

- **Soil Sample Collection:** Gathering real-time soil samples from multiple locations for laboratory testing.
- **Weather Data Integration:** Using meteorological sources and APIs to track historical and real-time weather patterns.
- **Farmer Consultation:** Interviewing local farmers about their current fertilizer usage and challenges faced.
- **Crop-Specific Data:** Analyzing which crops are grown in the region and their respective nutrient demands.

4. Next Steps

Based on the insights gained, our next steps include:

- **Data Preprocessing:** Cleaning and organizing the collected data for analysis.
- **Model Development:** Implementing AI/ML techniques to predict optimal fertilizer combinations.

- **Field Testing:** Verifying model predictions with real-world applications.
- **Report Compilation:** Documenting findings and preparing a technical paper on the study.

5. Conclusion

The visit provided valuable insights into fertilizer optimization and dataset collection methodologies. With expert guidance and field data, we are confident in building a robust model that will enhance agricultural productivity through sustainable fertilizer usage.


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