**Crop and Fertilizer Recommendation System Using Machine Learning Techniques**

**Abstract:**

Farming forms the backbone of India's economy, with 60% of people relying on it. Many farmers earn little because their crops don't yield much. They often think using more fertilizers and pesticides will boost their harvest, but this idea is wrong. It just costs more and harms the soil without making more crops grow. To fix this, farmers should pick crops that fit their land best, which can make yields go up. A system that suggests crops using machine learning (ML) and its algorithms like SVM, Decision Tree, Random Forest and Logistic Regressions can help with this. It looks at things like soil pH, Nitrogen, Phosphorus, Potassium, and how much rain falls. Our project uses ML to guess crop yields and tell farmers which fertilizers to use and how much. It does this by looking at past data about soil nutrients and local rainfall. This helps farmers grow better crops more, which means they make more money. Our system has already made farming results much better. In the future, we want to make our predictions more accurate and add cheap IoT sensors to watch soil moisture and nutrients as they change.

Keywords: Detection, Machine Learning, Prediction, Logistic Regression, SVM, Random Forest, Decision Tree

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