FERTILIZER RECOMMENDATION SYSTEM USING AI

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ABSTRACT

Agricultureplays a major role in food production and the Indian economy.

Fertilizer selection directly affects crop yield and soil quality.
Farmers often face difficulty in choosing the correct fertilizer.
This project uses Artificial Intelligence to recommend suitable fertilizers.
Inputs include soil nutrients, crop type, and environmental conditions.
The system improves productivity and supports sustainable agriculture.

INTRODUCTION

Traditional fertilizer selection is based on experience and assumptions.
Incorrect fertilizer usage leads to low yield and soil degradation.
AI provides a data-driven approach for fertilizer recommendation.
Machine learning algorithms analyze soil and crop parameters.
The system helps farmers make accurate and informed decisions.

LITERATURE SURVEY

Previous studies focuson AI applicationsinagriculture.

Decision Tree and Random Forest algorithms are widely used.
Some systems concentrate on crop recommendation.
Others focus on soil classification and nutrient analysis.
Most existing systems lack simplicity and real-time usability.

SYSTEM ARCHITECTURE

Datacollection from soiltesting reports.
Preprocessing of collected soil and crop data.
Training of machine learning model.
Prediction of suitable fertilizer.
Display of recommendation through application interface.

IMPLEMENTATION

Java is used for the application development.
Machine learning model is trained using agricultural datasets.
User inputs include NPK values, pH, and crop type.
The trained model predicts suitable fertilizer.
The system is designed to be scalable and user-friendly.

. ADVANTAGES AND APPLICATIONS

Reduces excessive use offertilizers.
Improves crop yield and soil health.
Reduces farming cost.
Easy to use for farmers.
Applicable in agriculture departments and research institutions.

CONCLUSION AND FUTURE SCOPE

AI-based fertilizerrecommendation improvesfarmingefficiency. The system provides accurate and reliable results. It supports sustainable agricultural practices. Future scope includes IoT sensor integration. Mobile and cloud-based extensions can be added.