

Truba Institute of Engineering & Information Technology, Bhopal

A PRESENTATION ON

Crop Yield Prediction



T R U B A

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Introduction

Agriculture is the backbone of the global economy, yet farmers face increasing challenges due to unpredictable weather conditions, changing environmental factors, and the need for efficient resource allocation.

- **Project Area:**
 - The project focuses on the integration of **Machine Learning** into agriculture to predict crop yields accurately.

Objective & Motivation

- **Objectives:**

1. Build a system that predicts crop yields based on environmental and agricultural factors.
2. Provide actionable insights to farmers to optimize resource utilization.
3. Promote sustainable agricultural practices using technology.

- **Motivation:**

- Address challenges of traditional prediction methods.
- Improve agricultural efficiency and profitability.
- Support food security through data-driven decision-making.

Problem Identification

- **Current Problems:**

- Traditional methods rely on static historical averages and lack precision.
- Inefficient use of resources like water and fertilizers.
- Inability to predict yield accurately due to changing environmental conditions.

- **Solution:**

- A machine learning model that integrates multiple environmental and agricultural factors to provide accurate crop yield predictions.

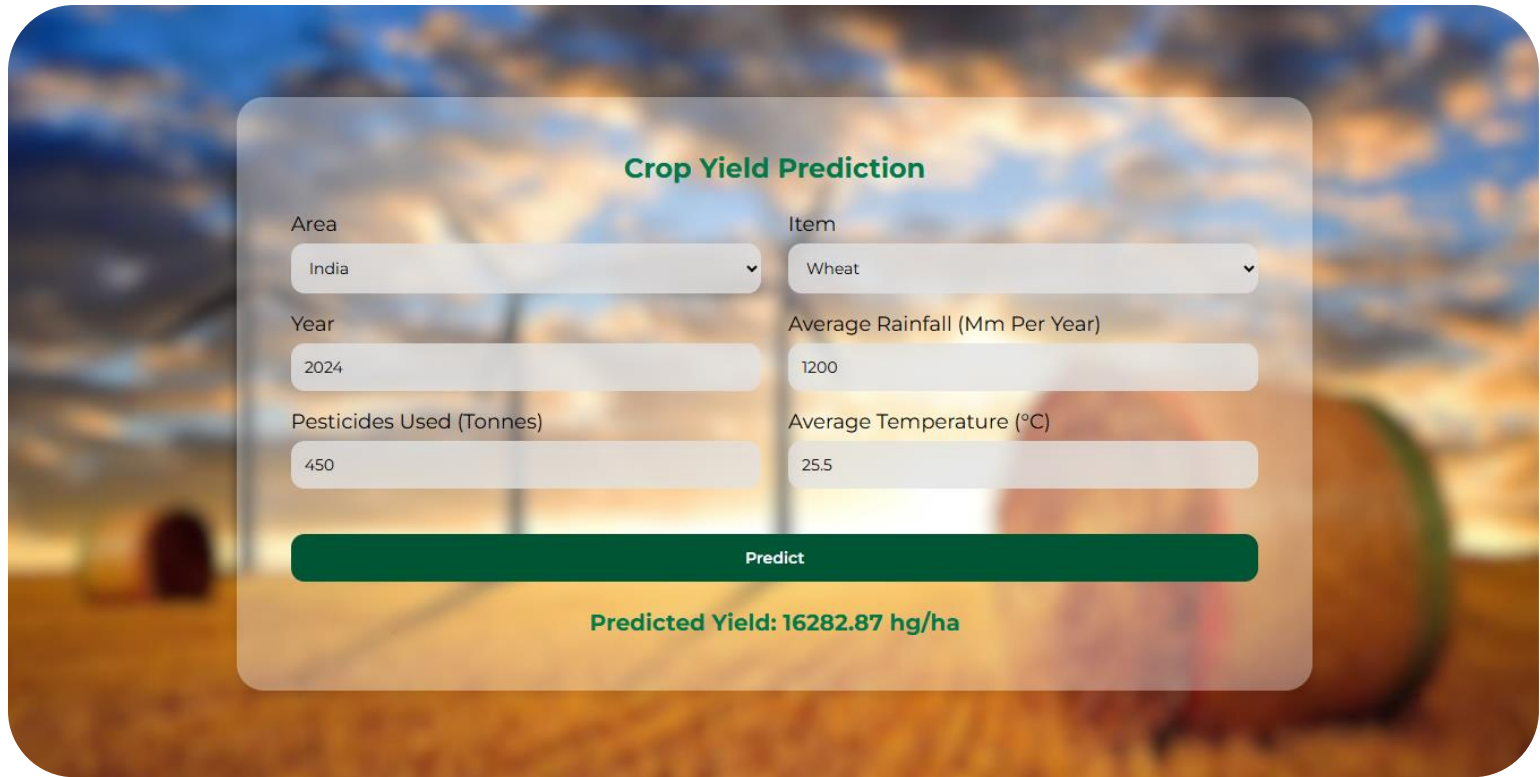
Proposed Work

- **Proposed System:**
 - A **web-based platform** that predicts crop yield based on inputs like region, crop type, year, rainfall, temperature, and pesticide usage.
- **Flowchart:** *(Insert a flowchart here, showing the process from data input to yield prediction result.)*

Implementation Details

- **Techniques Used:**
 - **Machine Learning Model:** Random Forest Regressor for yield prediction.
 - **Categorical Data Encoding:** OrdinalEncoder for region and crop type.
 - **Frameworks & Tools:**
 - Python, Scikit-learn, Flask, Pickle (model serialization).
 - Frontend: HTML, CSS, JavaScript.
 - **Software Requirements:**
 - Python 3.9+, Flask, and compatible web browsers.
 - **Hardware Requirements:**
 - Minimum 4GB RAM and 20GB storage.

Result/Expected Outcomes

A screenshot of a web application titled "Crop Yield Prediction". The form is set against a background image of a field with trees under a cloudy sky. It contains several input fields for user data and a large green button to submit the prediction.

Crop Yield Prediction

Area	Item
<input type="text" value="India"/>	<input type="text" value="Wheat"/>
Year	Average Rainfall (Mm Per Year)
<input type="text" value="2024"/>	<input type="text" value="1200"/>
Pesticides Used (Tonnes)	Average Temperature (°C)
<input type="text" value="450"/>	<input type="text" value="25.5"/>

Predicted Yield: 16282.87 hg/ha

Screenshot

Conclusion

- The **Crop Yield Prediction System** demonstrates how machine learning can optimize agricultural practices.
- By accurately predicting crop yields, the system helps farmers allocate resources effectively and plan cultivation strategies.
- With high accuracy and usability, the project showcases the transformative potential of technology in agriculture, promoting sustainability and efficiency.



THANK YOU