iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** IV **Month of publication:** April 2026

DOI: https://doi.org/10.22214/ijraset.2026.81320

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue IV Apr 2026- Available at www.ijraset.com

AI Based Smart Crop Recommendation and Price Prediction System

Dweep Chauhan, G. karthik, Kritika Dewangan, Ms. Heena Kausar(Guide)
Department of Computer Application, ShriShankaracharya Professional University, Bhilai, Chhattisgarh, India

Abstract: ***Agriculture plays a vital role in the economy of many countries, especially India. Farmers often face challenges in selecting suitable crops and predicting market prices due to changing climate conditions, soil properties, and demand fluctuations. This research proposes an AI-based Smart Crop Recommendation and Price Prediction System using machine learning techniques. The system recommends the most suitable crop based on environmental parameters such as soil type, temperature, humidity, rainfall, and pH value. It also predicts future crop prices using historical market data. Various machine learning algorithms such as Random Forest, Decision Tree, Support Vector Machine, and Linear Regression are applied for accurate recommendations and forecasting. Experimental results show improved decision-making support for farmers, increased productivity, and better profit planning.***

Keywords: Artificial Intelligence, Crop Recommendation, Price Prediction, Machine Learning, Smart Agriculture, MCA Research

I. INTRODUCTION

Agriculture is the backbone of India's economy. Farmers often depend on traditional methods and personal experience for crop selection and price estimation. Wrong crop selection may reduce yield, while uncertain prices may cause financial losses.

With the rise of Artificial Intelligence and Machine Learning, predictive systems can assist farmers in making data-driven decisions. This paper presents an intelligent system that recommends crops and predicts prices using historical and environmental data.

II. PROBLEM STATEMENT

Farmers face two major problems:

1) Which crop should be grown in current soil and climate conditions?
2) What will be the expected market price at harvest time?

Traditional methods are inaccurate and risky.

III. OBJECTIVES

1) Recommend best crop based on soil and weather data
2) Predict crop prices using historical mandi data
3) Increase farmer profit and reduce losses
4) Build user-friendly smart agriculture system

IV. LITERATURE REVIEW

Previous studies used machine learning for agriculture:

1) Decision Tree for crop recommendation
2) ARIMA for price forecasting
3) Random Forest for yield prediction
4) Deep Learning for weather prediction

However, very few systems combine **crop recommendation + price prediction** together.

V. PROPOSED METHODOLOGY

A. Input Parameters:

1) Crop Recommendation:

©IJRASET: All Rights are Reserved

- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)
- Temperature
- Humidity
- pH Value
- Rainfall

2) Price Prediction:

- Historical Market Price
- Seasonal Demand
- Supply Data
- Region Data

B. Algorithms Used:

1) For Crop Recommendation:

- Random Forest Classifier
- Decision Tree
- SVM

2) For Price Prediction:

- Linear Regression
- Random Forest Regressor
- LSTM (optional advanced)

VI. DATASET USED

1) Kaggle Crop Recommendation Dataset
2) AGMARKNET Market Price Dataset
3) Weather API Data
4) Soil Health Dataset

VII. ADVANTAGES

1) Smart decision support for farmers
2) Better crop planning
3) Accurate market forecasting
4) Reduces risk
5) Increases income

VIII. FUTURE SCOPE

1) Mobile App Integration
2) Voice Assistant in Hindi
3) Real-time Weather API
4) Government Subsidy Suggestions
5) Disease Detection from Leaf Images

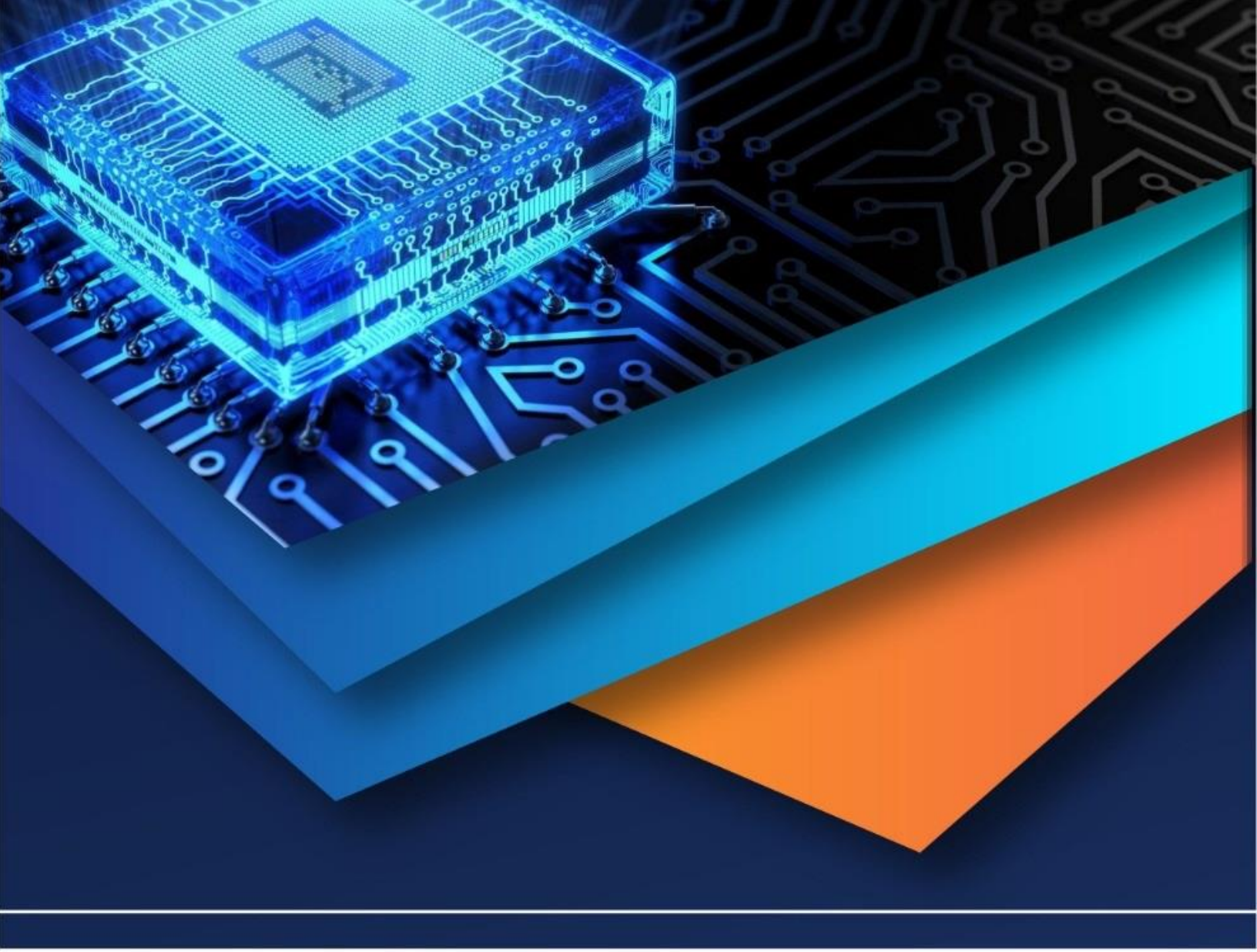
IX. CONCLUSION

The proposed AI-based Smart Crop Recommendation and Price Prediction System helps farmers choose profitable crops and estimate future prices. Machine learning improves agricultural productivity and income. The system can be widely used in smart farming ecosystems.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

REFERENCES

[1] Kaggle Crop Dataset
[2] AGMARKNET Price Data
[3] Scikit-learn Documentation
[4] FAO Agriculture Reports
[5] Research papers on ML in Agriculture



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)