

# Crop Prediction System using Machine Learning

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## ABSTRACT

India's economy is mostly based on agricultural yield growth and linked agro-industry products, as it is an agricultural country. Rainwater, which is often unpredictable in India, has a significant impact on agriculture. Agriculture growth is also influenced by a variety of soil parameters, such as nitrogen, phosphorus, and potassium, as well as crop rotation, soil moisture, and surface temperature, as well as climatic factors such as temperature and rainfall. India is quickly advancing in terms of technical advancement. As a result, technology will benefit agriculture by increasing crop productivity, resulting in higher yields for farmers. The suggested project provides a solution for storing temperature, rainfall, and soil characteristics in order to determine which crops are suited for cultivation in a given area. This paper describes a system, implemented as an android application, that employs data analytics techniques to predict the most profitable crop based on current weather and soil conditions. The suggested system will combine data from the repository and the meteorological department to make a prediction of the most suited crops based on current environmental conditions using a machine learning method called Multiple Linear Regression. This gives a farmer a wide range of crops to choose from. As a result, the project creates a system that integrates data from diverse sources, performs data analytics, and conducts predictive analysis in order to improve crop production productivity and boost farmer profit margins over time.

Machine learning, crop prediction, and yield estimation are some of the terms used in this paper.

**KEYWORDS:** *machine learning, crop prediction*

## INTRODUCTION

One of the most essential occupations in our country is agriculture. It is the country's most diverse economic sector and plays a critical role in its overall development. To meet the demands of the country's 1.2 billion inhabitants, agriculture takes up around 60% of the country's land. As a result, agricultural modernisation is critical, and it will lead to profit for our country's farmers. [1] Data analytic (DA) is the act of studying data collections in order to derive conclusions about the information they contain, with the help of specialised methods and software becoming more common. [2] Previously, yield prediction was done by taking into account the farmer's experience with a certain field and crop. Farmers, on the other hand, are forced to produce more and more crops as the weather changes swiftly

from day to day. Given the existing scenario, many of them lack sufficient knowledge of the new crops and are unaware of the benefits they receive from producing them. Understanding and anticipating crop performance in a variety of environmental circumstances can also boost agricultural output. As a result, the suggested system uses the user's location as an input. The nutrients of the soil, such as nitrogen, phosphorus, and potassium, are received from the site. The processing section additionally takes into account two more datasets, one collected from the meteorological department and anticipating the weather for the coming year, and the other being static data. This static data consists of crop production and demand data for various crops gathered from various sources. The suggested system uses machine

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learning and prediction algorithms such as Multiple Linear Regression to find patterns in data and then process it according to the input circumstances. As a result, the

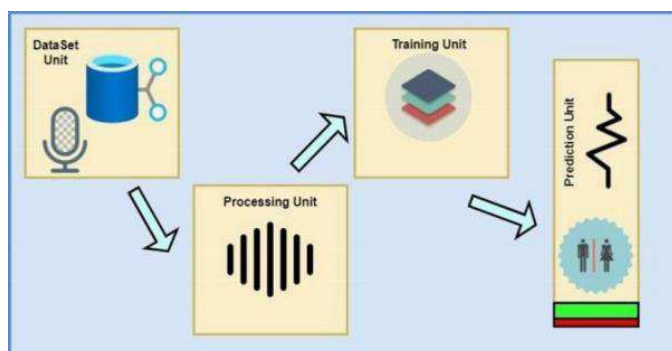
best possible crops will be suggested based on the given climatic circumstances. As a result, this system will simply require the user's location and will offer a selection of profitable crops, allowing the farmer to choose which crop to produce directly. The forecast will be more accurate because previous year's production will be factored in.

### WORKS IN CONNECTION

For selective packet dropping, wormhole, and Sybil assaults, there is a wealth of research on intrusion detection in wireless sensor networks. Below are a few examples of related work.

Machine learning algorithms are used to predict crop production and make fertiliser recommendations. In crop yield analysis, machine learning is a new topic of study. In agriculture, yield prediction is a critical issue. Any farmer would like to know how much of a crop he may expect [1]. Yield prediction used to be done by taking into account a farmer's previous experience with a certain field and crop. The yield prediction is a key issue that has yet to be resolved based on existing data [2], and it plays an essential role in the economic development of our country. Agriculture was the catalyst for the development of civilization. India is an agrarian country with a heavily reliant economy on crop productivity [3]. As a result, we may say that agriculture is the backbone of our country's economy. The selection of each crop is critical in agricultural planning. Crop selection will be influenced by a variety of factors, including market price, production rate, and government policies. To improve changes in our Indian economy, many adjustments in the agricultural industry are essential [4].

Numerous situations and other criteria are used to recommend the most productive crop based on the user's needs.



**Fig1: system diagram**

### PROBLEM FORMULATION

The system will be good if it collects related datasets on a website. Only then will we be able to use it. It aids the farmer in deciding which crop to produce by listing all available crops. In addition, this system takes into account previous data production, which will aid the farmer in gaining insight into the demand and cost of various crops in the future.

### CONCLUSION

The proposed system considers data on soil, weather, and previous year's production to recommend the most profitable crops that may be grown under the given environmental conditions. The technique assists the farmer in deciding which crop to produce by listing all available crops. Furthermore, this method takes into account previous data production, allowing the farmer to gain insight into market demand and costs for particular crops. Because this system will cover a wide range of crops, farmers may learn about crops they have never heard of before. All farming devices may be connected in the future. Agriculture growth is also influenced by a variety of soil parameters, such as nitrogen, phosphorus, potassium, crop rotation, soil moisture, and surface temperature, as well as weather factors such as temperature, rainfall, and so on. India is quickly advancing in terms of technical advancement.

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