System for Recommending Crops Using Machine Learning

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Abstract. Rural India's economy is mostly based on agriculture and its related industries. Agriculture has a big impact on the country's GDP (GDP). A blessing in disguise, the country's agricultural sector is a boon. In compared to worldwide norms, the yield per hectare of crops is disappointing. This might explain why marginal farmers in India commit suicide at greater rates than their non-farming counterparts. An easy-to-use yield forecast method for farmers is presented in this study Farmers will be able to connect to the planned system through a smartphone application. GPS aids in pinpointing a user's exact position. The region and soil type are entered by the user. The most lucrative crop list may be picked using machine learning techniques, or the crop yield of a user-selected crop can be predicted. There are various AI techniques that might be utilized to make forecasts about crop efficiency, including support vector machines, fake brain organizations, arbitrary timberlands, multivariate direct relapses, and K-Nearest Neighbors. The Random Forest was the most accurate, coming in at 95%. In addition, the algorithm recommends when to apply fertiliser to maximise production.

INTRODUCTION

Horticulture in India has a long and recognized history. Agricultural output in India is now second only to China [15]. 16.6 percent of the country's GDP was generated by the forestry and fishing industries in 2009, and half of the workforce was employed in these fields. [1] Farming's money related commitment to India's GDP has dropped during the most recent a very long while. The most important component in agricultural economics is crop yield. Numerous variables influence agricultural output, including climate, geography, organic matter, and financial resources [6]. A farmer's decision-making process is complicated by market price fluctuations when deciding when and what crops to plant[7]. An annual suicide rate of 1.4 to 1.8 percent per 100,000 Indians has been recorded during the previous decade. [15] A lack of confidence in weather conditions prevents farmers from deciding which crops to plant or when to begin. Seasonal weather conditions and essential resources like soil, water, and air may affect the need of fertilisers. Crop yields are continuously dropping in this scenario [2]. The issue may be solved by providing farmers with an intuitive recommender system that is easy to use.

In agriculture, predicting crop yields is a major issue [3]. When a farmer evaluates his or her prior experience with a particular crop in order to anticipate production, he or she is trying to learn about the yield and if it fulfils their expectations [4]. Weather, pests, and harvesting process preparation all have a role in crop yields. Accurate data on crop history is vital for risk management in the agriculture sector. [5].

A model has been developed in this study to deal with these challenges. The new feature of the proposed system is that it helps farmers optimise crop yields and recommends the most lucrative crop for a given location. According to the proposed approach, crop choice in view of financial and ecological circumstances and advantages may be used to maximise crop output [8]. There are a number of factors taken into account in the proposed model to generate predictions regarding crop yield. Use of fertilisers is also made easier by the method. Crop production prediction systems now in use either rely on expensive gear or are not widely available. The proposed technique offers a portable