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INTELLIGENT CROP RECOMMENDATION SYSTEM USING MACHINE LEARNING

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ABSTRACT:

Agriculture is a major contributor to the Indian economy. The common problem existing among the Indian farmers are they don't choose the right crop based on their soil requirements. Due to this they face a serious setback in productivity. This problem of the farmers has been addressed through precision agriculture. Precision agriculture is a modern farming technique that uses research data of soil characteristics, soil types, crop yield data collection and suggests the farmers the right crop based on their site-specific parameters. This reduces the wrong choice on a crop and increases the productivity. In this project, we are building an intelligent system, which intends to assist the Indian farmers in making an informed decision about which crop to grow depending on the sowing season, his farm's geographical location and soil characteristics. Further the system will also provide the farmer, the yield prediction if he plants the recommended crop.

Keywords: ML, Crime, cyberbullying, predict crime.

1. INTRODUCTION

A farmer's decision about which crop to grow is generally clouded by his intuition and other irrelevant factors like making instant profits, lack of awareness about market demand, overestimating a soil's potential to support a particular crop, and so on. A very misguided decision on the part of the farmer could place a significant strain on his family's financial condition. Perhaps this could be one of the many reasons contributing to the countless suicide cases of farmers that we hear from media on a daily basis. In a country like India, where agriculture and related sector contributes to approximately 20.4 per cent of its Gross Value Added (GVA) [2], such an erroneous judgment would have negative implications on not just the farmer's family, but the entire economy of a region. For this reason, we have identified a farmer's dilemma about which crop to grow during a particular season, as a very grave one. The need of the hour is to design a system that could provide predictive insights to the Indian farmers, thereby helping them make an informed decision about which crop to grow. With this in mind, we propose a system, an intelligent system that would consider environmental parameters (temperature, rainfall, geographical location in terms of state) and soil characteristics (pH value, soil type and nutrients concentration) before recommending the most suitable crop to the user.

LITERATURE SURVEY

Crop Selection Method to Maximize Crop Yield Rate using Machine Learning Technique Authors: Rakesh Kumar, M.P. Singh, Prabhat Kumar and J.P. Singh

This paper proposed a method named Crop Selection Method (CSM) to solve crop selection problem, and maximize net yield rate of crop over season and subsequently achieves maximum economic growth of the country. The proposed method may improve net yield rate of crops.

AgroConsultant: Intelligent Crop Recommendation System Using Machine Learning Algorithms Authors: Zeel Doshi, Subhash Nadkarni, Rashi Agrawal, Prof. Neepa Shah

This paper, proposed and implemented an intelligent crop recommendation system, which can be easily used by farmers all over India. This system would assist the farmers in making an informed decision about which crop to grow depending on a variety of environmental and geographical factors. We have also implemented a secondary system, called Rainfall Predictor, which predicts the rainfall of the next 12 months.

Development of Yield Prediction System Based on Real-time Agricultural meteorological Information Haedong Lee *, Aekyung Moon* * ETRI, 218 Gajeong-ro, Yuseong-gu, 305-700, Korea

This paper contains about the research and the building of an effective agricultural yield forecasting system based on real-time monthly weather. It is difficult to predict the agricultural crop production because of the abnormal weather that happens every year and rapid regional climate change due to global warming. The development of agricultural yield forecasting system that leverages real-time weather information is urgently required. In this research, we cover how to process the number of weather.

Analysis of Soil Behaviour and Prediction of Crop Yield using Data Mining Approach Monali Paul, Santosh K. Vishwakarma, Ashok Verma Computer science and Engineering GGITS, Jabalpur

This work presents a system, which uses data mining techniques in order to predict the category of the analyzed soil datasets. The category, thus predicted will indicate the yielding of crops. The problem of predicting the crop yield is formalized as a classification rule, where Naive Bayes and K-Nearest Neighbor methods are used.

Crop Recommendation System for Precision Agriculture S.Pudumalar*, E.Ramanujam*, R.Harine Rajashree, C.Kavya, T.Kiruthika, J.Nisha.

This paper, proposes a recommendation system through an ensemble model with majority voting technique using Random tree, CHAID, K-Nearest Neighbor and Naive Bayes as learners to recommend a crop for the site specific parameters with high accuracy and efficiency.

Existing system:

More and more researchers have begun to identify this problem in Indian agriculture and are increasingly dedicating their time and efforts to help alleviate the issue. Different works include the use of Regularized Greedy Forest to determine an appropriate crop sequence at a given time stamp. Another approach proposes a model that makes use of historical records of meteorological data as training set. Model is trained to identify weather conditions that are deterrent for the production of apples. It then efficiently predicts the yield of apples on the basis of monthly weather patterns. The use of several algorithms like Artificial Neural Network, K Nearest Neighbors, and Regularized Greedy Forest is demonstrated

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in [5] to select a crop based on the prediction yield rate, which, in turn, is influenced by multiple parameters. Additional features included in the system are pesticide prediction and online trading based on agricultural commodities.

Drawbacks

One shortcoming that we identified in all these notable published works was that the authors of each paper concentrated on a single parameter (either weather or soil) for predicting the suitability of crop growth. However, in our opinion, both these factors should be taken together into consideration concomitantly for the best and most accurate prediction. This is because, a particular soil type may be fit for supporting one type of crop, but if the weather conditions of the region are not suitable for that crop type, then the yield will suffer.

PROPOSED SYSTEM

We to eliminate the aforementioned drawbacks, we propose an Intelligent Crop Recommendation system- which takes into consideration all the appropriate parameters, including temperature, rainfall, location and soil condition, to predict crop suitability. This system is fundamentally concerned with performing the primary function of Agro Consultant, which is, providing crop recommendations to farmers algorithms. We also provide the profit analysis on crops grown in different states which gives the user an easy and reliable insight to decide and plan the crops.

2. AN OVERVIEW OF PROPOSED SYSTEM

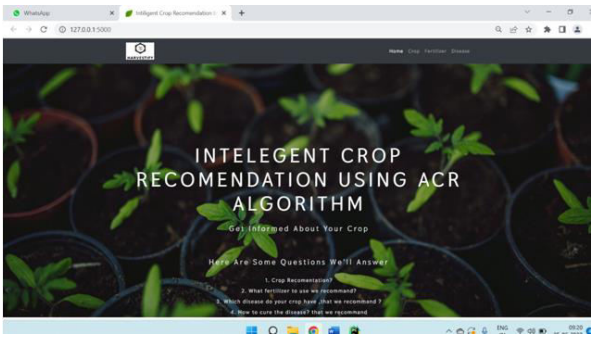

Fig.1. Home page

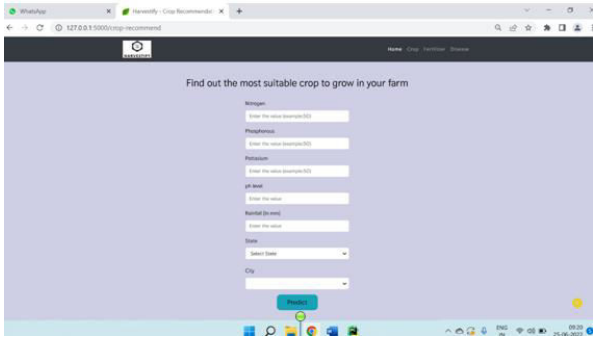

Fig.2. Registration form.

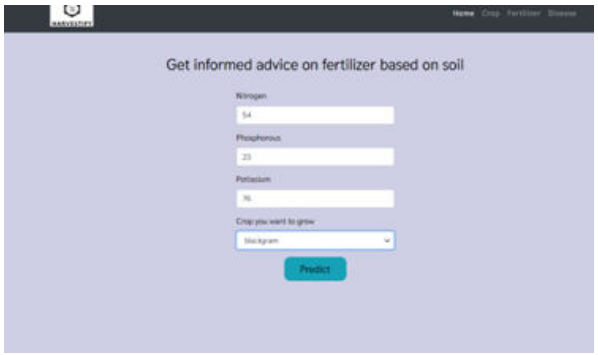

Fig.3. soil form.

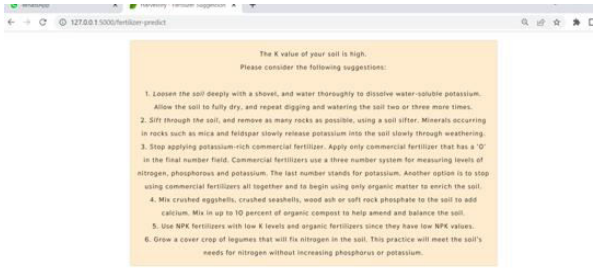

Fig.4. Soil information.

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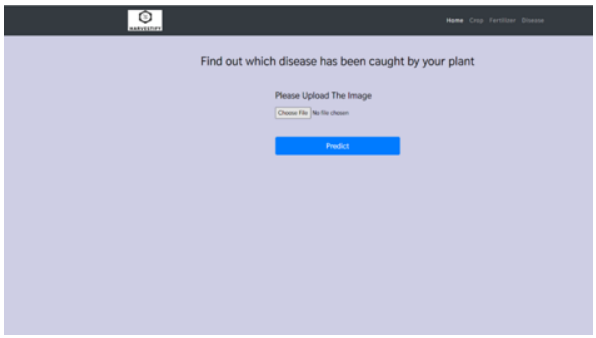

Fig.5. Disease detection.

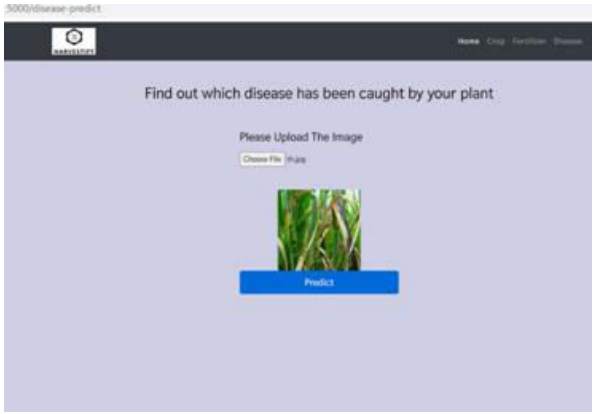

Fig.6. Select the image.

3. CONCLUSION

This system helps the farmer to choose the right crop by providing insights that ordinary farmers don't keep track of thereby decreasing the chances of crop failure and increasing productivity. It also prevents them form incurring losses. The system can be extended to the web and can be accessed by millions of farmers across the country. We could achieve an accuracy of 89.88 percent from the neural network and an accuracy of 88.26 percent from the linear regression model

Further development is to integrate the crop recommendation system with another subsystem, yield predictor that would also provide the farmer an estimate of production if he plants the recommended crop.

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