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Agro Expert

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ABSTRACT: Agriculture is believed to be the backbone of Indian economy. A backbone that has been bent since a longtime now as farmers are suffering huge economic losses due to climate change. But the advent of Information and Communication Technology (ICT) to develop agriculture in India shows us promising ways to solve this problem. It is imperative to find an efficient solution for the farmers that can help them in cultivating crops which can give them a better yield and are suitable as per the present weather conditions. In this paper, we propose web based app, krushiMitra intended to address this issue. There are total three modules in our project Crop Suggestion, Pesticide recommendation and Market Recommendation. In our first module we take a place wise and season wise crop dataset. Using collaborative filtering we suggest the crop to user. In second module we take a disease and crop name and using appropriate algorithm we predict the disease name, finally we recommend the pesticide of selected disease. In third module we recommend the market to the farmer for crop selling using linear regression prediction technique. Further, it will act as a complete farmers' friend helping them in taking strategic decision by suggesting them about various issues related with the cultivation of crops such as, crop recommendation, soil's current nutrient status, irrigation needs, pest and disease identification, yield estimation, market recommendation etc. KrushiMitra is a web based application which provides both English interfaces to seek different queries in real time related with the crop cultivation. The unique features of krushiMitra are its simple and user friendly interface

KEYWORDS: Pesticide, Data Mart, Relational Model, Collaborative Filtering, Algorithm, Preprocessing, Multi-regression.

I. INTRODUCTION

About 58.4% of the Indian population relies on agriculture as its primary source of livelihood. Further, it also caters to the food, fodder and fuel needs of the population and contributes to approximately sixteen percent of the total GDP and ten percent of the total exports. But in the last decade, the field of agriculture has suffered huge economic losses. One of the major reasons behind this is the drastic climate change taking place due to the rising global temperature. In addition to this one of the greatest problems farmers face today is the crop failure due to unsuitable weather conditions. Indian farmers are accustomed to grow their traditional crops only which many a times due to unfavorable weather conditions results in disappointment in terms of low or no yield. As a result, the rate of farmers' suicide in various region of India is also going up. Therefore, there is an urgent need of providing an easy and hassle free mechanism to farmers to decide which crops are the best suitable in their region according to the current weather conditions. Information and Communication Technology (ICT) has led the way in opening new ways for disseminating the information to the masses at a very low cost. In this app, the farmer has to select soil type and cropping season, and then accordingly the suitable crops are suggested. Unfortunately, this data is static in nature and doesn't consider the effect of real time weather conditions. It requires farmer to have prior knowledge of soil type and cropping season about which most of the farmers may not be aware of. This may lead to discourage them from using such kind of solutions. Further, there are more apps developed like 'mKisan' [2] in which the farmer posts queries through the app and the experts answer them. But, this can be a very time consuming process because of non-availability of the experts. There are other apps like 'RML Farmer' [3] and 'Kisan Suvidha' in Punjab [4] that provides basic information on crop prices, weather updates, and expert advice, but these apps just provide raw information to the farmers which needs to be processed by farmers to take a suitable decision. While, need of the hour is to have a system that gives definite and quick solutions/suggestions and decisions in real-time. In this , we introduce and provide detailed information on an web based multilingual app, "KrushiMitra" which targets to provide solution/suggestion to the farmers based on their location and the current weather condition regarding the cultivation of suitable crops as per their need. An extensive database has been made by integrating information from various sources to provide suggestion for crop cultivation at a regional level.



II. LITERATURE SURVEY

1) **Name:** Crop Yield Prediction using Machine Learning Techniques.

Author: Ramesh Medar, Vijay S. Rajpurohit, Shweta

Description: Agriculture is a field that contributes significantly to 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. 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 enhance our Indian economy, many reforms are essential in the agricultural industry.

2) **Name:** Crop Disease Detection Using Deep Learning .

Author: Omkar Kulkarni.

Description: Crop diseases have grown significantly in recent years as a result of dramatic climate change and a lack of immunity in crops. This results in large-scale crop destruction, reduced cultivation, and eventually financial loss for farmers. Identification and treatment of disease has become a serious concern due to the fast expansion of a range of diseases and a lack of basic knowledge among farmers. The leaves have a similar texture and appearance, which helps to identify the disease kind. As a result, computer vision combined with deep learning offers a solution to this problem.

3) **Name:** Crop Recommendation System for Precision Agriculture

Author: S.Pudumalar, E.Ramanujam, R.Harine Rajashree, C.Kavya, T.Kiruthika, J.Nisha

Description: Data mining is the process of analysing and extracting useful information from large amounts of data. Data mining is used in a variety of areas, including banking, retail, medicine, and agriculture. In agriculture, data mining is utilised to examine numerous biotic and abiotic aspects. Agriculture is a major source of income and employment in India. The most prevalent problem faced by Indian farmers is that they do not select the appropriate crop for their soil. They will experience a significant drop in production as a result of this.

4) **Name:** Crop Selection Method to Maximize Crop Yield Rate using Machine Learning Technique

Author: Rakesh Kumar, M.P. Singh, Prabhat Kumar and J.P. Singh

Description: Agriculture planning is important for agro-based countries' economic growth and food security. Crop selection is a crucial aspect of agricultural planning. It is determined by a number of factors, including production rate, market price, and government policies. Many scholars used statistics or machine learning techniques to study agricultural production rate prediction, weather prediction, soil classification, and crop classification for agriculture planning. When there are multiple options for planting a crop at the same time with limited land resources, crop selection becomes a challenge.

5) **Name:** Analysis of Soil Behaviour and Prediction of Crop Yield using Data Mining Approach

Author: Monali Paul, Santosh K. Vishwakarma, Ashok Verma

Description: Yield prediction is highly popular among farmers these days, and it helps them choose the right crops to sow. As a result, the topic of estimating agricultural yields is an intriguing challenge.

Previously, yield prediction was done by taking into account the farmer's experience with a certain field and crop. This paper describes a system for predicting the category of examined soil datasets using data mining techniques. The yielding of crops will be indicated by the category as projected. The challenge of predicting crop yield is codified as a classification rule, with approaches such as Naive Bayes and K-Nearest Neighbor being utilised.

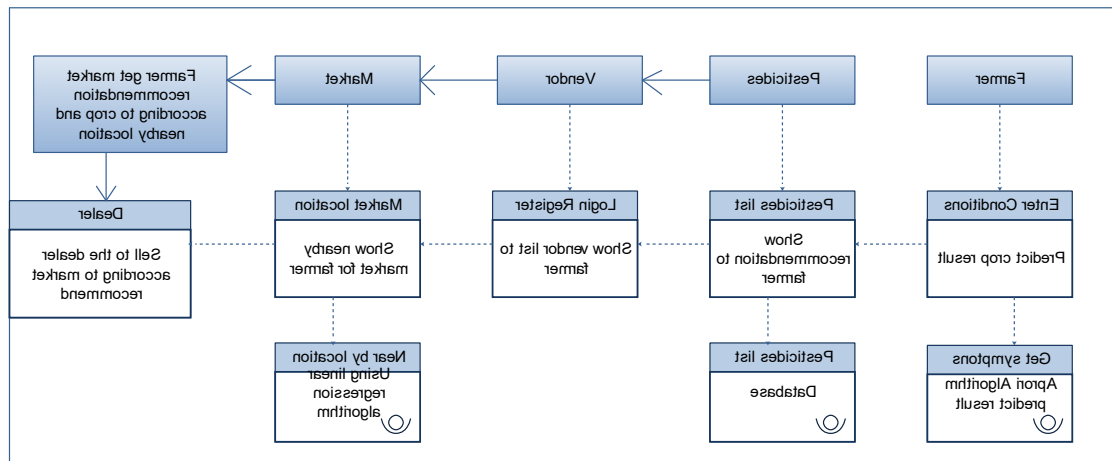
III. EXISTING SYSTEM

There is no computerized approach to help the farmers to sell their products, see the pesticide for crops. Presently, the farmer moves to nearest market place or fertilizer store, to hand over his/her product to some particular agent or for fertilizers, the agent requests the farmer to visit the market after some specific time to collect the money earned out of the product sold. That agent sells the same product to some other agent or dealer at an excessive cost. By this every



agent tries to cut his/her commission out of that. The farmer cannot be aware of transaction and the amount at which their product was sold. There is no facility present for the farmers to know the market rates at different markets where they can sell their products for achieving earnings of higher profits. Utmost times, farmers are unaware of the compensations and schemes provided by government. Regardless of all the chances knocking the doors the farmers find it hard to cut benefit out of those. So he/she doesn't get the maximum profit in the current system.

IV. PROPOSED SYSTEM



In this system we recommend crops according to seasons. we are going to predict the disease by selecting their symptoms. As per the disease, we predict the pesticides and its quantity as per the requirements and accessibility of disease. To grow more in less land two important sustainability factors for the crop are necessary; one is the fertilizer and pest control. Due to environmental impact pest control mechanism becomes the highest priority for the farmers. Many pesticide /insecticide companies introduce new pesticides frequently. To make use of this facility and efficaciously produce greater profits farmers needs the knowledge of the pesticide. In this app we have present an overview of the design and development of data warehouse to help the farmers in deciding the mechanism for pest control. There are total three modules in our project Crop Suggestion, Pesticide recommendation and Market Recommendation. In our first module we take a place wise and season wise crop dataset. Using collaborative filtering we suggest the crop to user. In second module we take a disease and crop name and using apriori algorithm we predict the disease name, finally we recommend the pesticide of selected disease. In third module we recommend the market to the farmer for crop selling using leaner regression prediction technique.

Advantages of Proposed System:

- 1) Improve facility for the farmers to know the market rates at different markets where They can sell their products for achieving earnings of higher profits...
- 2) Improve facility to detect disease and prevent crop from diseases.
- 3) Proposed system is use full for all the formers.
- 4) It is very fast to recommend disease and its fertilizers.

V. CONCLUSION

Agroexpert is an app that integrates various aspects of farming such as crop selection, soil nutrition, irrigation seed selection, pest & disease problem and yield estimation. It can be of great utility to the farmer as presently there is no single platform where all the problems of the farmers are addressed in the real-time without the involvement of a middleman. Hitherto, the developed app supports crop selection in multilingual format. In future, remote sensing of the soil nutrition, which is a major challenge, will be integrated with the app. We also aim to provide support for



more Indian languages for the widespread outreach and utilization of the app. also this app helps the farmers to know more about market information; will act as distinctive interface of schemes and compensation. Through this they will always be connected to information of new technique and trends of farming. But to some extent, new user may feel some kind of stress about its use. On the whole, the system is quicker, safe and easier to work with.

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