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AGRICULTURAL CROP RECOMMENDATION SYSTEM BY USING MACHINE LEARNING TECHNIQUES

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ABSTRACT

Uncertainty in agricultural output is a problem for coastal areas like California. More population and land area should lead to more output, yet this is not the case. For decades, farmers have relied on word of mouth, but climate change has rendered this information obsolete. Factors and parameters in agriculture allow for the derivation of insight into agri-data. Using the data at hand, machine learning methods construct a clear model to aid in prediction. Crop forecast, crop rotation, water needs, fertilizer needs, and crop protection are only some of the ag problems that may be addressed. It is important to have an efficient approach to assist crop cultivation and to give a hand to farmers in their production and management because of the fluctuating climatic conditions of the environment. Future farmers might benefit from this, perhaps making agriculture more successful. It is possible to provide a system of recommendations to a farmer to aid the small scale agriculture production through data mining.

When adopting this strategy, it is important to choose crops that thrive in the region's climate and are suitable for harvesting in large quantities. Recommendations for crops have been made after analyzing the crop data set, taking into account factors such as productivity and growing season.

Keywords- Knowledge Discovery in Databases, NaiveBayes, Recommender Systems, Machine Learning, and Data Science

I. INTRODUCTION

Despite having Asia's third-largest landmass, India is home to the continent's second-highest population density. In terms of agricultural output, it is unrivaled. The majority of Indians work in agriculture. In today's globally-competitive environment, the agricultural sector has a strong reputation. Plants are cultivated, including rice, sugarcane, cotton, coconuts, and groundnuts. Biological fertilizers are manufactured effectively. In many places, farming is the main industry. Grain farming has a profound effect on a nation's economy. In recent years, agriculture has declined because

of shifts in the balance of natural variables. Environmental elements, including but not limited to sunshine, humidity, soil type, rainfall, maximum and minimum temperatures, weather patterns, fertilizers, insecticides, and so on, have a direct impact on agricultural production. Agriculture will thrive with more information on appropriate harvesting and crop planting. Seasons of India It begins in December and ends in March, making it winter. Seasonal transition from winter to summer, beginning in March and lasting until June.

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3. a wet period (monsoon) from July to September and October and November make up the post-monsoon, fall season. Since weather patterns and seasons may vary, it's important to determine which crops can thrive in a certain area. Crop management, projected crop output, and productive yield from crops are all key issues that farmers must contend with. Many modern youth are interested in agriculture, thus farmers and growers require good assistance in crop production.

The IT industry's influence on evaluating real-world problems is growing at a breakneck pace. The area of agriculture is producing even more data. A system that can clearly analyze agricultural data and generate actionable insights is needed.

information from this spreading data.

Obtaining insights from data requires learning.

II. CROP RECOMMENDATION SYSTEM:

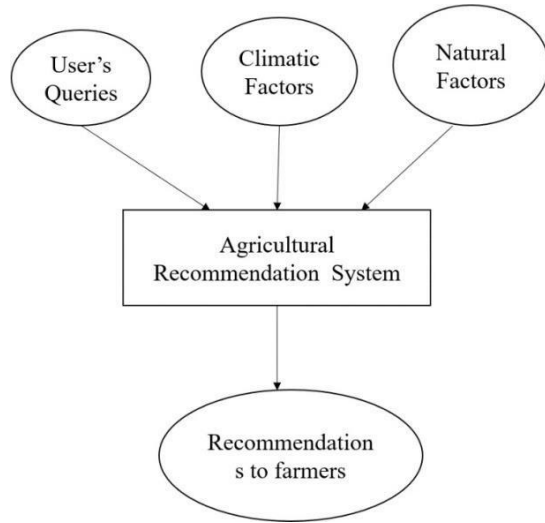


Fig – Crop Recommendation

This system employs a combination of a collaborative filtering methodology and a content-based filtering methodology in its recommendation algorithms. Benue State, Nigeria's food items have been the subject of data collection efforts. The quality is improved by the proposed technique. Models for estimating agricultural yields have been explored extensively. Data clustering is carried

out with techniques such as k-means and k-means++ in order to forecast agricultural production. For the purpose of pesticide management in crop cultivation, Tripathy et al. developed a data mining-based method. Essential Nature of soil is a determining factor in agricultural research. A wide variety of oils are available.

available in this India.

Depending on the soil conditions, different crops may be grown.

Improving agricultural cultivation is examined, with a focus on the importance of soil.

The soil parameter is analyzed using data-mining methods.

More trustworthy outcomes from red and black soil analysis are achieved by using JRip, J48, and Naive Bayes methods.

The effect of agricultural characteristics on crop management is investigated in an effort to boost output.

The agro-cultural aspects are being studied using neural networks, soft computing, big data, and fuzzy logic.

Pritam Bose created a Spatiotemporal Analysis with Crop Estimation SN N Model.

Using clustering algorithms, we created an automated system to collect data on soil composition and climate for use in crop production.

Rapid knowledge transfer is made possible by advances in communication technology, which have helped bring formerly isolated groups of people, such as farmers, into the modern world. In a short amount of time, farmers may get valuable knowledge about agricultural concepts with the use of Semantic Web based Architecture and GIS technologies.

Information about the weather and other environmental elements are sent using GIS.

In this way, anybody who needs access to this data may do so.

farmer through any ICT device. Economic

Understanding the evolution of the cosmos is possible using GIS and spatial technology.

Appropriate methods must be employed to extract information from a massive agricultural knowledgebase.

Data Mining plays a crucial position amongst these technologies. Mining is used to uncover hidden, actionable information and make predictions about the future. For farmers to be able to pick and choose between crops, find new farmers, and establish correlations between crops, data has been declassified, associated, and clustered. The farmers' prior experience was used to make the crop predictions. In spite of persistent improvements in agricultural knowledge, agricultural factors have undergone remarkable transformations. At some point, it will be necessary to make use of engineering's predictive power in agricultural production. The use of data mining in agricultural studies is unique. In order to make predictions, researchers in this subject collect and analyze historical records using neural networks. Its closest neighbor is K. The K-means algorithm does not rely on past data but rather makes predictions based on the central tendencies and clustering of the samples themselves. The computational complexity of the method serves as a

a significant problem. the use of artificial neural networks to agricultural computation, which improves precision even with more data.

An architecture developed in uses
input;selects needed features;

classification

andassociationruleminingareappliedandvisualized.

III.CONCLUSION

The importance of crop management was examined deeply in this research. When it comes to modern agricultural advancements, farmers need all the help they can get. Timely crop forecasts may be communicated to farmers. Machine learning methods have been applied to a wide range of agricultural parameters. Literature reviews investigate various agricultural approaches. Farmers may improve their output by following the advice

they get when variables such as productivity and season are taken into account.

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