ESTIMATE THE CROP YIELD USING DATA ANALYTICS

Introduction

Agriculture is the backbone of Indian Economy. Crop production in India is one of the most important sources of income and India is one of the top countries to produce crops. As per this project we will be analyzing some important visualization, creating a dashboard and by going through these we will get most of the insights of Crop production in India. Yield prediction is the important agricultural problem. The farmers necessarily requires a timely advice to predict the future crop productivity and an analysis is to be made in order to help the farmers to maximize the crop production in their crops. Every farmer is interested in knowing, how much yield he is about expect. In the past, yield prediction was performed by considering farmer's previous experience on a particular crop. The volume of data is enormous in Indian agriculture. The data when become information is highly useful for many purposes.

Literature Review

[1] M. A. Jayaram and Netra Marad, "Fuzzy interference Systems for Crop Prediction", Journal of Intelligent Systems, 2012, 21(4), pp.363-3720.6.

A**dvantages :**

It uses new methods to solve everyday problems. It is understandable and straightforward. Fuzzy logic is also extensively used today. The results are acceptable, it can be used with confidence, especially if we are dealing with inaccurate inputs.

Disadvantages :

Human knowledge is often incomplete and episodic as compared to systematic way. If the model is not known then it is impossible to achieve the stability of the controller system. Sometime rules are mismatched and non coherent.

[2] P. Vindya "Agricultural Analysis for Next Generation High Tech Farming in Data Mining" , Anna University, Trichy, Tamilnadu, India, 5 May 2015.

Advantages:

The purpose is to estimate difference in efficiency and prediction between organic and inorganic farming. This work achieves a high accuracy and a high generality in terms of yield prediction capabilities.

Disadvantages:

It includes high costs of maintenance. The majority of farmers are illiterate, and understanding how to use current technologies in farming is difficult. Production cost in organic farming is quite higher.

Algorithm used: Genetic Algorithm, Artificial Neural Network (ANN), Nearest neighbor, Memory based reasoning.

[3] Dakshayini Patil, M .S, Shirdhonkar. Rice Crop Yield Prediction using Data Mining Techniques: An Overview. International Journal of Advanced Research in Computer Science and Software Engineering, 2017; 7(5):427-43.

Advantages:

It predicts the yield of rice crops and helps in growing better strategies at various climatic conditions.

Disadvantages:

This research has the ability to only detect the yield of rice crops and it doesn't detect any other crops. So, it is not effective.

Algorithm used: WEKA tool.

[4] David B. Lobell, The use of satellite data for crop yield gap analysis, Field Crops Research-143, 2013; 56–64.

Advantages:

Satellite data have repeatedly been shown to provide information that, by themselves or in combination with other data and models, can accurately measure crop yields gap in farmers' fields.

Disadvantages:

Design, development, investment and insurance of satellite requires higher cost. They are often less accurate than field-based measures**.** Satellite Internet latency can be a significant problem. Unlike terrestrial communications, minor changes in weather can have a massive impact on both the speed and latency of satellite data. Image processing is a time taking process.

Algorithm used: Agronomy.

[5] M. Paul, S. K. Vishwakarma and A. Verma, "Analysis of Soil Behaviour and Prediction of Crop Yield Using Data Mining Approach," 2015 International Conference on Computational Intelligence and Communication Networks (CICN), 2015, pp. 766-771, doi: 10.1109/CICN.2015.156.

Advantages :

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.

Disadvantages :

The soil properties suitable for crop yield are considered. Climatic properties that affect the crops are not considered. For crop analysis, we need to monitor various environmental parameters such as temperature, humidity and moisture.

Algorithm used: Naive Bayes and K-Nearest Neighbour (KNN).

References:

[1] M. A. Jayaram and Netra Marad, “Fuzzy interference Systems for Crop Prediction”, Journal of Intelligent Systems, 2012, 21(4), pp.363-3720.6

[2] P. Vindya “Agricultural Analysis for Next Generation High Tech Farming in Data Mining” , Anna University, Trichy, Tamilnadu, India, 5 May 2015.

[3] Dakshayini Patil, M .S, Shirdhonkar. Rice Crop Yield Prediction using Data Mining Techniques: An Overview. International Journal of Advanced Research in Computer Science and Software Engineering, 2017; 7(5):427-43.

[4] David B. Lobell, The use of satellite data for crop yield gap analysis, Field Crops Research-143, 2013; 56–64.

[5] M. Paul, S. K. Vishwakarma and A. Verma, "Analysis of Soil Behaviour and Prediction of Crop Yield Using Data Mining Approach," 2015 International Conference on Computational Intelligence and Communication Networks (CICN), 2015, pp. 766-771, doi: 10.1109/CICN.2015.156.

[6] D Ramesh, B Vishnu Vardhan. Data Mining Techniques and Applications to Agricultural Yield Data. International Journal of Advanced Research in Computer and Communication Engineering. 2013;2(9).

[7] Dhivya B H, Manjula R, Siva Bharathi S, Madhumathi R. A Survey on Crop Yield Prediction based on Agricultural Data, International Journal of Innovative Research in Science, Engineering and Technology. 2017; 6(3):4177-4182.

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[10] R. Sujatha, P.Isakki Devi. A Study on Crop Yield Forecasting Using Classification Techniques, IEEE,2016.