ESTIMATION OF CROP YIELD USING DATA ANALYTICS - A Literature Survey

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Abstract

One of the most important occupations for human survival is Agriculture and especially the majority of the population in India is into this. Due to variations in climatic conditions and various other challenges, the Agrarian sector in India is facing rigorous problems to maximize crop productivity. It has become an arduous task to achieve the desired targets in crop yield. Various factors like monsoon rains, rodents, water scarcity are to be considered, which do have a direct impact on the production and productivity of the crops. And thus, crop yield prediction with recent advancements in technology can be one of the important factors in agriculture practices as the use of technology in agriculture has comparatively increased in the recent years.The present study gives insights on data analytics methods applied to find the crop yield prediction and also signifies the important points in the proposed area of research.

Related Work

[2] CROP YIELD PREDICTION USING MACHINE LEARNING
By B M Sagar

A research group investigated the utilization of various information mining methods which will foresee rice crop yield for the data collected from the state of Maharashtra, India. A total of 27 regions of Maharashtra were selected for the assessment and the data was collected related to the principle rice crop yield influencing parameters such as different atmospheric conditions and various harvest parameters i.e Precipitation rate, minimum, average, maximum and most extreme temperature, reference trim cultivable area, evapotranspiration, and yield for the season between June to November referred as Kharif, for the years 1998 to 2002 from the open source, Indian Administration records. WEKA a Java based dialect programming for less challenging assistance with information data sets, assigning design outcomes tool was applied for dataset processing and the overall methodology of the study includes, (1) pre-processing of dataset (2) Building the prediction model utilizing WEKA and (3) Analyzing the outcomes. Cross validation study is carried out to scrutinize how a predictable information mining method will execute on an ambiguous dataset. Study applied 10-fold higher cross validation study design to assess the data subsets for screening and testing. Identified and collected information was randomly distributed into 10 sections where one data section was used for testing while all other data sections were utilized for the preparation information. Study reported that the method applied was supportive in the precise estimation of rice crop yield for the state of Maharashtra,

India. The precise quantification of the rice productivity in various climatic conditions can help farmers to understand the optimum condition for the higher rice crop yield.

[3] ANALYSIS OF CROP YIELD PREDICTION USING DATA MINING TECHNIQUES

by D Ramesh , B Vishnu Vardhan

Generally in this paper, the datas are taken into account to analyze the production and yield. The data are taken in eight input variables. The variables are 'Year', 'Rainfall', 'Area of Sowing', 'Yield', 'Fertilizers' (Nitrogen, Phosphorus and Potassium) and 'Production'. The attribute 'Year' specifies the year in which the data are available in Hectares. 'Rainfall' attribute specifies the average rainfall in centimeters. 'Area of Sowing' attribute specifies the total area sowed in the specified year for that region in Hectares. 'Yield' specifies a kilogram per hectare. 'Production' attribute specifies the production of crops in the specified year in Metric Tons. 'Fertilizers' specify in Tons.

Similarly statistical model like Multiple Linear Regression(MLR) techniques can be applied on existing data and analyzed using data mining techniques like density-based clustering technique which is a method of considering the data points in the region separated by two clusters of low point density were taken into account for the estimation crop yield analysis.

[4]Crop Yield Prediction Using Data Analytics and Hybrid Approach

by Ms. Shreya V. Bhosale, Ms. Ruchita A. Thombare, Mr. Prasanna G. Dhemey, Students and Ms. Anagha N. Chaudhari

Various techniques and algorithms are discussed in this paper for predicting the crop yield. Using one such method or interrelating two or more methods results in better productivity and efficiency. The three approaches are listed as follows

1. K-means clustering
   Clustering is the process of grouping the data.Basically the K in K-means denotes the number of clusters.Each cluster is represented by the mean value of the objects in the cluster. Data objects which are similar to each other belong to the same cluster.The database about the clusters are stored in a computer, then the studied k-means algorithm is applied and the frequent item is obtained as the output.
2. Apriori algorithm
   Here in apriori the support for the crop is found. With the help of it, the crops which have maximum support from the people are selected for estimation.
3. Naive Bayes algorithm
   Generally this algorithm is based on bayesian classification. The probability of the crops grown in an acre of land is considered for calculation and the majority is taken for final accumulation of the result.

Conclusion

A comparison of the subsequent crop yield predictions can be made with the entire set of existing available data and can be dedicated to suitable approaches for improving the efficiency of the proposed technique.This work will help farmers to increase the yield of their crops.

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