

Literature Review

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Review of Literature Methods

1. Crop Yield Prediction Using Data Mining Techniques:

India is a country where farming and agriculture-based industries are the major resource of economy. It is also one of the country which suffer from major natural calamities like drought or flood which damages the crop which cause huge financial loss for the farmers and economic stability of the country. Predicting the crop yield well in advance prior to its harvest can help the farmers and Government organizations to make appropriate planning like storing, selling, fixing minimum support price, importing/exporting etc. Predicting a crop well in advance requires a systematic study of huge data coming from various variables like soil quality, pH, essential elements (N, P, K) quantity etc. As Prediction of crop deals with large set of database thus making this prediction system a perfect candidate for application of data mining methodologies which majorly helps in acquiring a knowledge to achieve higher crop yield. The success of any crop yield prediction system heavily relies on how accurately the features have been extracted and how appropriately classifiers have been employed. Study summarizes the results obtained by various algorithms which are being used by various authors for crop yield prediction, with their accuracy and recommendation. Weeds and pests were the major crop damaging biotic agents and the farmers are need to be well informed in accessing the various data mining technologies to acquire a knowledge on applications of effective weed and pest control strategies and managing techniques to reduce crop damage. Collection of data related to the various weeds and pest, modelling of the data to prepare for the mining, selection of appropriate methodology, interpretation and sharing the information become the major challenges in weed and pest control to protect the crop damage. A study was conducted to evaluate the major challenges and noteworthy opportunities and applications of Big Data in controlling the weed and pest damage and hence to achieve higher crop yield. Study reported that the form of the data collected, type of the assessment method and tools applied are the major influencing factors in understanding the role of crop damaging agents such as weed and pest, which provides the knowledge on using improved crop management strategies and crop yield prediction. Big Data cargo space and questioning incurs intense challenges, in respect to allocate the data across numerous technologies, and also continuously evolving data from diverse sources. When the selected data

was from the different sources, semantic methodologies play a vital role in the assessment, which preliminarily detect the factors possess potential agricultural importance and developing relationships between data items in terms of meanings and units. Study presented a success story from the Netherlands in using the information from the Big Data analytics, with numerical algorithms in controlling the crop damage and reported the higher crop yield. Study concluded that, the utility and the applications and of big data analytics for weed and pest control is very large and particularly for invasive, parasitic and herbicide-resistant weeds. Also imported the need of collaboration of agricultural scientists with data scientists to implement the methodologies for the benefit of agricultural practices.

2. Crop Yield Prediction Using Machine Learning:

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, pre-processing of dataset Building the prediction model utilizing WEKA and Analysing 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 in 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 farmer to understand the optimum condition for the higher rice crop yield.

3. Crop yield prediction using Big Data Analytics:

In India crop yield is season dependent and majorly influenced by the biological and economic causes of an individual crop. Reporting of progressive agricultural yield in all the seasons is an ample task and an advantageous task for every nation with respect to assesses the overall crop yield prediction and estimation. At present a common issue worldwide is, farmers are stressed in producing higher crop yield due to the influence of unpredictable climatic changes and significant reduction of water resource worldwide. A study was carried out to collect the data on world climatic

changes and the available water resources which can be used to encourage advanced and novel approaches such as big data analytics to retrieve the information of the previous results to the crop yield prediction and estimation. Study imported that the selection and usage of the most desirable crop according to the existing conditions, support to achieve the higher and enhanced crop yield.