

Literature Survey

Estimate the crop yield using data analytics

INTRODUCTION:

Agriculture is important for human survival because it serves the basic need. A well-known fact that the majority of population ($\geq 55\%$) in India is into agriculture. Due to variations in climatic conditions, there exist bottlenecks for increasing the crop production in India. It has become a challenging task to achieve desired targets in Agri based crop yield. Various factors are to be considered which have direct impact on the production, productivity of the crops. Crop yield prediction is one of the important factors in agriculture practices. Farmers need information regarding crop yield before sowing seeds in their fields to achieve enhanced crop yield. The use of technology in agriculture has increased in recent years and data analytics is one such trend that has penetrated into the agriculture field. The main challenge in using big data in agriculture is identification of effectiveness of big data analytics. Efforts are going on to understand how big data analytics can improve agriculture productivity. The present study gives insights on various data analytics methods applied to crop yield prediction.

EXISTING SOLUTIONS:

Regression analysis is applied as a predictive modelling tool to predict crop production for crop production. The regression algorithms applied were, Multivariate Adaptive Regression Splines, and then Multiple Linear Regression, Random Forest Regression. According to the results, Random Forest Regression may be used to accurately estimate wheat, and rice, and maize production.

The accuracy rate improves when a dataset with more features is used. As opposed to other approaches, such as Decision trees, linear regression, random forest algorithm is shown to be superior to other prediction algorithms. The included dataset incorporates a lot more variables resulting in more precise prediction.

LITERATURE REVIEW:

At present we are at the immense need of another Green revolution to supply the food demand of growing population. With the decrease of available cultivable land globally and the decreased cultivable water resources, it is almost impossible to report higher crop yield. Agricultural based big data analytics is one approach, believed to have a significant role and positive impact on the increase of crop yield by providing the optimum condition for the plant growth and decreasing the yield gaps and the crop damage and wastage. With this aim the present paper reviews about the various advances, design models, software tools and algorithms applied in the prediction assessment and estimation of the crop yield. India is basically agriculture based country and approximately 70% our country economics is directly or indirectly related to the agricultural crops. The principle crop which occupies the highest (60-70%) percentage of cultivable land in the Indian soil is the paddy culture and it is the major crop especially in central and south parts of the India. Rice crop cultivation plays an imperative part in sustenance security of India, contributing over 40% to general yield generation. The enhanced yield of the rice crop depends largely on the water availability and climatic conditions. For example, low precipitation or temperature extremes can drastically diminish rice yield. Growing better strategies to foresee yield efficiency in a mixture of climatic conditions can help to understand the role of different principle factors that influence the rice crop yield. Big data analytic methods related to the rice crop yield prediction and estimation will certainly support the farmers to understand the optimum condition of the significant factors for the rice crop yield, hence can achieve higher crop yield.

CONCLUSION:

As a result of penetration of technology into agriculture field, there is a marginal improvement in the productivity. The innovations have led to new concepts like digital agriculture, smart farming, precision agriculture etc. In the literature, it has been observed that analysis has been done on agriculture soils, hidden patterns discovery using data set related to climatic conditions and crop yields data. The activities of agriculture field are numerous like weather forecasting, soil quality assessment, seeds selection, crop yield prediction etc. In this survey, the specific activity, crop yield prediction has been surveyed and the major trends have been identified. The rice crop yield prediction has been done in the state of Maharashtra using data mining techniques in one of the works . The analysis has been done using machine learning framework WEKA. In the work carried out in, various algorithms applied in the assessment crop yield and mechanism for knowledge discovery has been discussed. The challenges and opportunities in the field of Big Data analytics in agriculture has been discussed in with a case study of Netherlands. Fuzzy logic designs have been used in optimizing the crop yields and the same has been explained in the research work . A case study of Nebraska - USA and at a national scale for Argentina and Kenya has been done and presented. The remote sensing technology for identification and measurement of the causes of yield gaps and their impact on final crop yield is presented. It can be concluded that the research in the field of agriculture with reference to using IT trends like data analytics is in its infancy. As the food is the basic need of humans, the requirement of getting the maximum yields using optimal resource will become the necessity in near future as a result of growing population. The survey outcomes indicate the need for improved techniques in crop yield analytics. There exists a lot of research scope in this research area.

REFERENCES:

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