

## **PROBLEM STATEMENT**

The Problem Statement revolves around prediction of crop yield using Data Analytics

Techniques. The goal of the project is to help the users choose a suitable crop to grow in order to maximize the yield and hence the profit.

## **INTRODUCTION**

Agriculture forms the basis for food security and hence it is important. In India, majority of the population i.e., above 55% is dependent on agriculture as per the recent information. Agriculture is the field that enables the farmers to grow ideal crops in accordance with the environmental balance. This agriculture domain provides employment to more than 60% of the total population and has a contribution to GDP . This is the widest economic sector and has an important role regarding the framework of socio-economic fabric of India. Farming depends on various factors like climate and economic factors like temperature, irrigation, cultivation, soil, rain fall, pesticide and fertilizers. The industries such as fertilizers, seed, agrochemicals and agricultural machinery plan production and activities like marketing based on the estimates of crop yield . Crop yield prediction has generated a lot interest in the research community. Smart agriculture driven by Information Technology is the emerging trend in the research in this area in recent days. One of the areas being explored is the problem of yield prediction which is a major concern. Data analytics is one such trend that has penetrated into the agriculture field being used for management of crop yield and monitoring crop health. The data mining and data analytics techniques use artificial intelligence, statistics, machine learning and database system. The precision agriculture market continues to evolve, allowing farmers to embrace data-driven solutions. While the future opportunities for data analytics in agriculture . Data analytics is a critical part of improving business operations in every industry. An organization can utilize data analytics to improve decision-making, analyze customer trends, track customer satisfaction and identify opportunities for new products and services to meet growing market need. 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. Data analytics can help farmers monitor the health of crops in real-time, create predictive analytics related to future yields and help farmers make resource management decisions based on proven trends. Through the incorporation of a data analytics strategy, agribusinesses gain the ability to answer sales-related questions through data from a single platform, creating the opportunity to make timely, evidence-based decisions. They also gain visibility of pricing, which allows for decisions to be made based on profitability. The main challenge using big data in agriculture is identification of impact and effectiveness of big data analytics. Efforts are going on to understand how big data analytics can be used to improve the productivity in agricultural

practices.

## **ABSTRACT**

Agriculture is important for human survival because it serves the basic need. 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 year and data analytics is one such trend that has penetrated into the agriculture field. 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. 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. The accurate prediction of crop yield certainly benefits the farmers in choosing the right method to reduce the crop damage and gets best prices for their crops. A research group conducted a work with an objective of accurate prediction of crop yield through big data analytics to assess various crop yield . Crop yield gaps, measured as difference between expected yields based on the potency and actual farm yield received. In order to achieve the higher crop yield, farmers must need to tackle the influencing factors such as influence of change in climate conditions on the prospects of crop yields, and change in the usage of agricultural land to assess and ultimately reduce the crop yield gaps. The impact of the crop yield gaps assessment studies conducted through bio simulation based methodologies were negatively influenced by quality and resolution of climate and soil data, as well as unscientifically expectations about crop yield prediction systems and crop yield assessment modeling designs calibration method. Analyzing the yields of crop is necessary to update the policies to ensure food security. A research group conducted a study with the aim in suggesting a novel data mining method to predict the yields of crop depends on agricultural big data analytics methodologies. Satellite retrieved data have frequently been revealed to present data sets that, by itself or in grouping with other information and model designs, can precisely determine the yields of crop in agricultural lands. Study proposed two less complicated, easily assessable methods to determine and quantify the yield gaps between various agricultural fields. First method works closely with the constructive maps representing the average crop yields, it can be used directly to accesses specific crop yield influencing factors for further studies whereas the second method use the remote sensing technology to retrieve the data for providing the useful information regarding the crop yield prediction and estimation.

## **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.

#### REFERENCES

- Majumdar J, Ankalaki S. Comparison of clustering algorithms using quality metrics with invariant features extracted from plant leaves. International Conference on Computational Science and Engineering. 2016
- F K Van Evert, S Fountas, D Jakovetic, V Crnojevic, I Travlos, C Kempenaar. Big Data for weed control and crop protection. John Wiley & Sons Ltd on behalf of European Weed Research Society, 2017: 218-233.
- Yogesh Gandge, Sandhya. A Study on Various Data Mining Techniques for Crop Yield Prediction, International Conference on Electrical, Electronics, Communication, Computer and Optimization Techniques, IEEE, 2017;420-423
- V. Sellam and E. Poovammal. Prediction of Crop Yield using Regression Analysis, Indian Journal of Science and Technology, 2016; 9(38).
- Martin K. van Ittersuma, Kenneth G. Cassmanb, Patricio Grassinib, Joost Wolfa, Pablo Tittonell, Zvi Hochmand. Yield gap analysis with local to global relevance-A review. Field Crops Research - 143, 2013; 4-17