***LITERATURE SURVEY ON ESTIMATING***

***CROP YIELDS***

**INTRODUCTION**

Crop production forecasts/estimates are generally portrayed as the product of two components: area (to be) harvested and (expected) yield per unit area. The accurate estimation of both harvested area and yield are equally important in ensuring the accurate determination of their product. Although the yield part of the equation gets most of the attention, there are many complexities to the estimation of area that might not be readily apparent. Timing qualifiers will be associated with the term estimation to distinguish the early or mid-season (and even prior-to-season) efforts from those at end-of-season.

As estimation evolved as a science, lists of crops were estimated to obtain crop information. However, lists are expensive to maintain and are usually out of date and incomplete leading to biased estimates. Crop estimation evolved as another approach; area defined populations are complete and their estimates are unbiased. However they have their own set of costs and problems, such as poor small area estimates for minor crops and the initial cost of creating the crop estimating frame. Combining crop and list frames, known as multiple frame estimating, has some very good qualities and solves some of the problems with each of them individually.

Estimates have progressed from being sums of local crop information, direct expansions of statistically estimated data, crop specific pixel classifications, through error corrected regression and/or calibration estimation. Some crop estimation is much more accurate and timely. Classification outputs also allow users more access to crop yielding information, such as needed for planning the crop harvest periods.

**EXISTING SOLUTIONS**

1. Rice Crop Yield Prediction using Data Mining Techniques: An Overview by Dakshayini Patil, Dr. M .S, Shirdhonkar in 2017 .

Discussed various data mining techniques utilized for prediction of rice crop yield for the state of Maharashtra, India. WEKA tool was applied in dataset processing .

1. A Survey on Crop Yield Prediction based on Agricultural Data by Dhivya B H, Manjula R, Siva Bharathi S, Madhumathi R in 2017.

Presented a survey on the different algorithms applied in the assessment and prediction of crop yield Discussed about the mechanism of knowledge the discovery in Agricultural data mining .

1. A Study on Various Data Mining Techniques for Crop Yield Prediction by Yogesh Gandge, Sandhya in 2017.

Discussed various data mining techniques employed for predicting the crop yield and signifies the importance of accurate data extraction methods of big data analytics.

1. A Study on Crop Yield Forecasting Using Classification Techniques by R.Sujatha, Dr.P.Isakki Devi in 2016.

Discuss the importance of comparing previous agricultural data with present to identify optimum condition favor enhanced crop yield. Envisaged the importance of best crop selection depending onthe season and the climatic factors which supports enhanced crop yield.

1. Prediction of crop yield using big data by Wu Fan, Chen Chong, Guo Xiaoling, Yu Hua Wang Juyun in 2015.

Developed a novel model i.e Nearest neighbors modeling tocalculate and predict the yield of crop depends on the available Big data sets.

1. The use of satellite data for crop yield gap analysis by David B. Lobell in 2013

Discussed the use of remote sensing technology to identify and measure the causes of yield gaps and the assess the impact on the overall crop yield. Reported very simple methodologies to measure the yield difference with respect to season, environment and the land use.

1. Yield gap analysis with local to global relevance-A review by Martin K. van Ittersuma, Kenneth G. Cassmanb, Patricio Grassinib, Joost Wolfa, Pablo Tittonell, Zvi Hochmand

Discussed about the various methodsused on quantifying the yield gaps at local-to-global ratio. Reported few standard operation methods, employed inquantifythe crop yield potential on the data collected from the farmers ofwestern Kenya, Nebraska (USA) and Victoria (Australia). Study recommended for the use of accurate and current yield data, with calibrated and validated cropmodels and up scaling methods in the prediction of crop yield.

1. Prediction of Crop Yield using Regression Analysis by V. Sellamand E. Poovammal in 2016

Regression analysis was carried out to find the relationship among the parameters i.e Area under Cultivation (AUC), Annual Rainfall (AR) and Food Price Index (FPI) which influences the final crop yield and reported that the crop yield principally depends on the Annual Rainfall (AR).

**CONCLUSION**

Use of big data,machine learning along with data mining can provide promising results to bring the most effective accuracy in analysing the prediction model.The main aim is to estimate the crop yield using various approaches.

**REFERENCES**

1. 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.
2. Jharna Majumdar, Sneha Naraseeyappa, Shilpa Ankalaki. Analysis of agriculture data using datamining techniques: application of big data. Journal of Big data. 2017.
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4. 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.
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**PROBLEM STATEMENT**

Indian Agriculture sector requires innumerable types of data analytics in various sectors such as crop productivity prediction models, economic models, pest and crop disease prediction models, crop price forecasting models, etc. The frequent changes

in climate conditions are affecting more in crop production. Most of the forecasts are seasonal and are available around 1-2 months before the crop harvesting. Farmers are benefited if estimation and forecast of particular crop are available before sowing of crop.

Contribution of this research is to improve the agricultural productivity and provide the crop estimation to farmers.

The objectives of this research are:

1. Weather indices based Analysis – To analyses relationship of crop yield ,monthly average temperature and monthly average rainfall.

2. Seasonal Analysis – To analyses crop yield with respect to seasonal weather parameters.