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## “FARMER BENEFICIERY SYSTEM USING MACHINE LEARNING”

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**Abstract:-** Agriculture is the pillar of the Indian economy and more than 50% of India's population are dependent on agriculture for their survival. Variations in weather, climate, and other such environmental conditions have become a major risk for the healthy existence of agriculture. Machine learning (ML) plays a significant role as it has decision support tool for Crop Yield Prediction (CYP) including supporting decisions on what crops to grow and what to do during the growing season of the crops. Agriculture is the pillar of the Indian economy and more than 50% of India's population are dependent on agriculture for their survival. Variations in weather, climate, and other such environmental conditions have become a major risk for the healthy existence of agriculture. Machine learning (ML) plays a significant role as it has decision support tool for Crop Yield Prediction (CYP) including supporting decisions on what crops to grow and what to do during the growing season of the crops.

**Keywords :-** Precision Agriculture, Machine learning, Crop prediction, Supervised Learning, Whether Forecast, Python, Effective farming

**Introduction:-** From ancient days, agriculture is considered as the main source of occupation, and also one of the India's major industrial sectors. The farmers are caught to follow a traditional naked eye observation and yielded healthy crops without the involvement of chemicals for animals and also to their cultivation land in order to keep healthy diversity. But nowadays, weather conditions are being rapidly changing against the elemental assets to deplete the food and increase the security. In meantime, the GDP

in agricultural sector is keep on decreasing, where in 2005 it was about 17.2%, in 2012 it was 11.1, in 2018 it was 5% and in first quarterly year of 2019- 2020 it came down to 2%. Approximately 80 percent of farmers come from rural areas, and if the revenue from crop production goes down, their lifestyle would be influenced by the farms at industry level. supply to satisfy the daily needs of human lives. It is also considered a primary

Ultra-modern technology can be used for weather forecasting, weed management, crop harvesting and Storage, seed sowing and plant growth, pest protection, product selection and quality maintenance. There are few studies in these areas, such as applications in various fields, weed detection, yield prediction, crop management, plant stress prediction, detection of fruit diseases, disease detection in plants, fruit sorting, soil analysis, cluster of management areas, Agricultural water productivity. The importance of machine learning techniques in agriculture, non-destructive testing and consistent results. Machine learning has become the most fascinating stream of computer science. Machine learning and artificial intelligence are synonyms used from time to time. Finally, a computer system or a machine that learns as a human, that is, if previous data, possible combinations of data trends and results are simulated or entered into its system, it can think for itself. It advances machine learning algorithms than their counterparts i.e. the traditional set-rule algorithms. They can analyse a large no.of results or outcomes in the shortest possible time. A machine learns based on the input fed in the programming language by the developer. Machine algorithms analyse any typical situation based on multiple combinations of conditions fed into it. It can predict the future related to crop yield, nutrition value, etc. upto a significant extent. There are three basic types of learning machine algorithms first supervised and second unsupervised and finally third reinforcement learning.

In our research, which we found in the previous research papers is that everyone uses climatic factors like rainfall, sunlight and agricultural factors like soil type, nutrients possessed by the soil (Nitrogen, Potassium, etc.) but the problem is we need to gather the data and then a third party

does this prediction and then it is explained to the farmer and this takes a lot of effort for the farmer and he doesn't understand the science behind these factors. To make it simple and which can be directly used by the farmer this paper use simple factors like which state and district is the farmer from which crop and in what season ( as in Kharif, Rabi, etc.).

In India, there are more than a hundred crops planted around the whole country. These crops are categorized for better understanding and visualization. The data for this research has been acquired from the Indian Government Repository . The data consists of attributes – State, District, Crop, Season, Year, Area and Production with around 2.5 Lakh observations. The depicts the states and territories of India which visualize that which category of crops are famous in which season.

## Literature Survey :-

1. 2020 *International Conference for Emerging Technology (INCET) Belgaum, India. Jun 5-7, 2020* Potnuru Sai Nishant<sup>1</sup> , Pinapa Sai Venkat<sup>2</sup> , Bollu Lakshmi Avinash<sup>3</sup> , B. Jabber<sup>4</sup> in this research paper author explained about which crop is suitable for the particular season, Using the state and district weather (Kharif and Rabi etc). Authors can explain various methodology, In this research paper authors used basically two important concepts Pre-processing and Stacked regression .

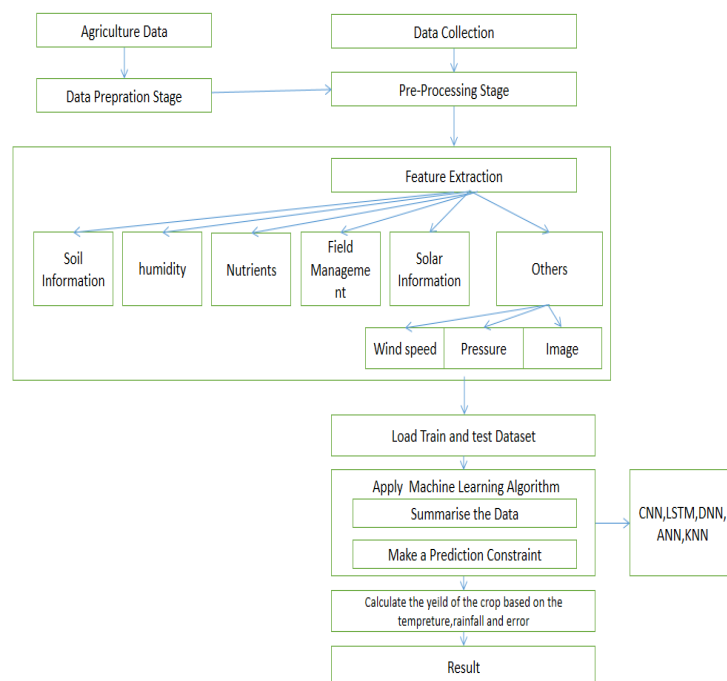
2. *Proceedings of the Fifth International Conference on Intelligent Computing and Control Systems (ICICCS 2021) IEEE Xplore Part Number: CFP21K74-ART; ISBN: 978-0-7381-1327-2* D.Jayanarayana Reddy and Dr M. Rudra Kumar author research to shows several existing models that consider elements such as temperature, weather condition, performing models for the effective crop yield prediction. Ultimately, the experimental study showed the combination of ML with the agricultural domain field for improving the advancement in crop prediction. However, still more improvement in feature selection was required in terms of temperature variation aspects effects on agriculture. In the further studies, the key possibility that should be concentrated such as firstly the delay to border topographical areas required additional-explicit treatment. Next, a nonparametric portion of the model using machine learning algorithm and thirdly, using features from deterministic crop models to get perfect statistical CO<sub>2</sub> fertilization.

3. 2020 *8th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO) Amity University, Noida, India. June 4-5, 2020* Bhawana Sharma, Jay Kant Pratap Singh Yadav, Sunita Yadav

This paper discuss over various areas of crop management like yield prediction, disease detection, weed detection soil and water management using machine learning and image processing technique. Some technique show better results in term of accuracy. This encourage the use of machine learning in field of agriculture. Out of these algorithm no one put it down there focus on maturity grading of a crop in crop management. So machine learning may be a suitable candidate for monitor crop maturity. This paper illustrate a proposed model which uses image processing and machine learning techniques to determine maturity stages of a crop by using digital

images. Now a day new machine learning and deep learning technique are contributing in research field, so it is the future scope to add these techniques in previously existing models to achieve higher accuracy.

**Methodology:-** The crop yield production system uses machine learning algorithms. This is a genetic algorithm used to solve complex problems with more variable and possible outcome or solution. Bad solution are replaced by good solution.



To make a crop production system we use of Python(Jupyter Notebook). It will focus on ML. We can use the Weather\_API & Android System.

**Future Scope:-** The output which has been shown in figure is currently a web application, but our future work would be building an application where the farmers can use it as an app and converting the whole system in their regional language.

**Conclusion:-** This survey comprises over various areas of crop management like yield prediction, disease detection, weed detection soil and water management using machine learning and image processing technique. Some technique show better results in term of accuracy. This encourage the use of machine learning in field of agriculture. Out of these algorithm no one put it down there focus on maturity grading of a crop in crop management. So machine learning may be a suitable candidate for monitor crop maturity. This paper illustrate a proposed model which uses image processing and machine learning techniques to determine maturity stages of a crop by using digital images. Now a day new machine learning and deep learning technique are contributing in research field, so it is the future scope to add these techniques in previously existing models to achieve higher accuracy.

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