

# Literature Survey

## **1)WB-CPI: Weather Based Crop Prediction in India Using Big Data Analytics.**

- In this paper **Akhilesh Kumar Sharma, Oorja Garg, and Krishna Modi (2021)** worked at collecting and analyzing temperature, rainfall, soil, seed, crop production, humidity and wind speed data, which will help the farmers improve the produce of their crops.
- Firstly, they have pre-processed the data and used MapReduce framework.
- Secondly, k-means clustering is employed on results gained from MapReduce.
- After that, they have used bar graphs and scatter plots to study the relationship between the crop, rainfall, temperature, soil and seed.

- **Advantage**

- Level of scalability is high.

### **Dis-Advantage**

- It's not always very easy to implement each and everything using machine learnings.

## **2)Assimilating remote sensing data into a crop model improveswinter wheat yield estimation based on regional irrigation data.**

- In this study **NingJin, BoTao WeiRen, DongyanZhang (2022)**
- used a regional irrigation data for winter wheat grown on the Loess.
- Also, this involves analysis regarding different assimilation state variables and algorithms.
- The combination of PSO+NDVI produced the highest accuracy for yield estimation in Hongtong county

### **Advantage**

- Good for multi objective optimization.

### **Dis-Advantage**

- Less accuracy in solution.

### **3) Estimation of crop production using machine learning techniques.**

- In this paper **Jyoti Mahajan, Kriti Banal and Samridhi Mahajan (2021)** has presented a crop yield prediction system using machine learning algorithms.
- Historical production and meteorological data was collected and processed for analysis and applying ML algorithms.
- The ML Techniques used were decision trees, random forest, support vector regressor, gradient boosting.

### **Advantage**

- Provides predictive accuracy that cannot be trumped.

### **Dis-Advantage**

- Prone to overfitting.

### **4) Estimation of Crop Yield from Combined Optical and SAR Imagery Using Gaussian Kernel Regression.**

- In this study **Yeshanbele Alebele, Wenhui Wang, Weiguo Yu, Xue Zhang (2021)** proposed Gaussian kernel regression for rice yield estimation from optical and SAR imagery using a limited amount of ground truth data.
- The main objective was to investigate the synergetic use of Sentinel-2 vegetation indices and Sentinel-1 interferometric coherence data.

### **Advantage**

- Gives a reliable estimation of their own estimation.

### **Dis-Advantage**

- They loss efficiency in high dimensional spaces.

## **5) Crop Yield Estimation and Interpretability with Gaussian Processes.**

- In this work **Laura Martínez-Ferrer, Maria Piles, Gustau Camps-Valls (2021)** introduced the use of Gaussian processes (GPs) for the estimation.
- The proposed methodology combines synergistic information on canopy greenness, biomass, soil, and plant water content from optical and microwave sensors with the atmospheric variables.
- GPs finally allow us to identify climate extremes and anomalies impacting crop productivity and their associated drivers.

### **Advantage**

- Prediction process is straight forward.

### **Dis-Advantage**

- Makes use of the whole features/samples.