# Comparative Study of Rice Crop Yield Prediction Techniques using ML

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*Abstract:* Food is the most important thing for any living thing in the world. Human beings eat varieties of food across the world. One of the most popular is rice. There are thousands of varieties of rice and that many number of ways to eat it. We have analyzed the ways in which rice crop can be yielded. In this paper we are comparing the various techniques used for rice crop yield prediction using machine learning so that rice production is more.

## 1. Introduction:

In past, soil tested manually to predict crop yield. Now days, technology has developed tremendously so that we can make great use of it in very field. In agriculture field, we can predict lot of things during pre-harvesting, harvesting and post- harvesting of crops. In this paper we have compared various techniques used during pre-harvesting phase for rice crop yield prediction. The predictions are correct up to 80% but soil and whether analysis are also important. If that goes wrong, then it may result in loss of expected profit.

## 2. Comparative Analysis:

Below table shows various techniques used in rice crop yield prediction along with authors and remark.

| Sr. No. | Author | Method used for Prediction | Remark |
|---|---|---|---|
| 1 | Miss Prerana D. Gayke, Prof. Monika S. Rokade September 2021 | Prerana and Monika have used e a novel hybrid approach for the crop yield prediction using machine learning. Soil and weather analysis is necessary for more crops and predict net crop yield. They have used a combination of forecasts to perform time series models and predict NDVI time series derived from optical remote sensing data **Sentinel-2 satellite NDVI time series analysis is done for prediction.** | Most of the predictions KNN and Random forest gives the better accuracy more the 90% in some cases. |

Table 2.1 Comparative Study of ML techniques used for Rice Yield Prediction

| Sr. No. | Author | Method used for Prediction | Remark |
|---|---|---|---|
| 2. | Nanjesh Gowda M P1, Chetan2, Ramya S April 2019 | KNN Classifier data mining technique is used to predict the yield of the rice. The overall study indicates that the soil parameters and weather conditions are important factors in predicting the rice yield | Predictions using KNN algorithm are most accurate and are more useful to farmers. Data Mining also provide techniques to increase crop yield. It avoids the loss of yield and result in profit to the farmers. |
| 3. | Htwe Htwe Pyone1 , Thin Thin Swe2 March 2020 | Data mining techniques i.e. KNN (K-nearest neighbor) classifier can be used to enhance prediction of crop yield under different whether conditions. Manhattan based KNN classifier to classify rice crop yield. | Prediction using KNN Classifier is more than 80% accurate. |
| 4. | Kiran Moraye1 , Aruna Pavate2 , Suyog Nikam3 and Smit Thakkar4 March 2021 | Random Forest algorithm which we decided to use to train our model to give high accuracy and best prediction. 10-fold cross-validation technique which is indicates which is gives high accuracy and correlation between the climate and the crop yield and accuracy of the model is found 87%. | The web application will help farmers and users to take a better decision according to climate of particular season to decide which crop need to plant-based on which climate. |

**3. Conclusion:**

With the reference of above table we conclude that KNN Classifier method as per Miss Prerana D. Gayke, Prof. Monika S. Rokade[1], Nanjesh Gowda M P1, Chetan2, Ramya S [2] and Htwe Htwe Pyone1 , Thin Thin Swe2[3] gives most accurate result for rice crop yield prediction as compared to other techiques. Along with prediction soil and whether analysis matters too. If everything is ok, the result will be fruitful.

**4. References:**

1. Miss Prerana D. Gayke , Prof. Monika S. Rokade. CROP YIELD PREDICTION USING WEATHER DATA AND NDVI TIME SERIES, ( Peer-Reviewed, Open Access, Fully Refereed International Journal ) Volume:03/Issue:09/September-2021
2. Nanjesh Gowda M P, Chetan, Ramya S. RICE YIELD PREDICTION USING DATA MINING TECHNIQUE, International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 06 Issue: 04 | Apr 2019
3. Htwe Htwe Pyone1 , Thin Thin Swe, RICE CROP YIELD CLASSIFICATION BY USING MANHATTAN BASED KNN ALGORITHM, © IJCIRAS | ISSN (O) - 2581-5334 March 2020 | Vol. 2 Issue. 10
4. Kiran Moraye1 , Aruna Pavate2 , Suyog Nikam3 and Smit Thakkar4. Crop Yield Prediction Using Random Forest Algorithm for Major Cities in Maharashtra State International Journal of Innovative Research in Computer Science & Technology (IJIRCST) ISSN: 2347-5552, Volume-9, Issue-2, March 2021 https://doi.org/10.21276/ijircst.2021.9.2.7 Article ID IRP1134, Pages 40-44