Predicting the Rainfall and Crop Price to Select Suitable Crop: A Case Study in Badulla District

K.P.S.M. Nandasiri[1], K. Banujan[1*], B.T.G.S. Kumara[1], S. Jayasinghe[2], E.M.U.W.J.P. Ekanayake[3], and S. Prasanth[4]

[1]Department of Computing and Information Systems, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka.
[2]Department of Export Agriculture, Uva Wellassa University of Sri Lanka, Badulla, Sri Lanka.
[3]Department of Computer Science and Informatics, Uva Wellassa University of Sri Lanka, Badulla, Sri Lanka.
[4]Department of Physical Sciences and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka.

*bhakuha@appsc.sab.ac.lk

The agricultural sector is becoming increasingly significant in the global economy. The daily growth of the world population necessitates a high level of crop production and yield rate in order for people to live. However, as the human population grows, the environment also changes as a result of human activity. So, it has led to difficulties in weather prediction, which is essential to crop cultivation. This demands a proper mechanism for predicting weather for farming. Farmers will be benefited if they can have an estimate of how much yield rate they can harvest and what is the price range they will be able to get for their efforts. As a result, machine learning technologies have become novel and trending technology among the agricultural sector due to their ability to provide accurate predictions regarding farming. Among all of these, selecting the suitable crops for cultivation has become critical. This study has proposed a machine learning approach to predict the right crop for a specified period. Decision Tree Regression and Random Forest Regression machine learning models have been used in the study to predict the rainfall and price of the crops. To select the best performing models, the authors have used root mean square error and R square value for the coefficient of determination. In the case of rainfall prediction, the Decision Tree obtained 12.07 and 0.03 for RMSE and R squared respectively. In the case of price prediction, Random Forest obtained 10.58 and 0.92 for RMSE and R squared respectively.

Keywords: Machine Learning, Weather Prediction, Price Prediction, Yield Prediction