

FORECASTING RED ONION PRICE IN BALIKPAPAN USING THE SARIMA NEURAL NETWORK HYBRID METHOD

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ABSTRACT

Shallots are spice commodity that functions as a food seasoning as well as a traditional medicinal ingredient. According to Yusral in his research in 2017, the increasing growth of society in Indonesia has resulted in the consumption of shallots in Indonesia also continuing to increase every year. Meanwhile, in terms of production, in 2022 shallot production will decrease from the previous year. This is due to high rainfall which resulted in shallot plants being attacked by pests. This resulted in soaring shallot prices in Indonesia, especially in East Kalimantan. In this research, forecasting shallot prices in Balikpapan was carried out with the aim of anticipating shallot price fluctuations in Balikpapan and also anticipating losses related to things that will occur. The method used in this study is the Hybrid SARIMA Neural Network Method. The Hybrid SARIMA Neural Network method is a forecasting method that combines linear and non-linear models in time series analysis. The results of this study obtained four SARIMA models, including the SARIMA(0,1,0)(1,1,0)¹², model SARIMA([2],1,0)(0,1,0)¹², model SARIMA(0,1,0)(0,1,1)¹² and model SARIMA(0,1,[2])(0,1,0)¹² model. Furthermore, the model was improved using backpropagation neural network and obtained the best model is BPNN(2-4-1). After the predictions were made, the MAPE value was 19.64% (good forecasting results).

Keywords : red onion, forecasting, SARIMA, hybrid method, Backpropagation Neural Network, MAPE