Abstract

Corn production in Gorontalo Province experiences fluctuations due to rainfall anomalies and changes in harvested land area, which affect regional food security. This study aims to compare the reliability of the Support Vector Regression (SVR) and Seasonal Autoregressive Integrated Moving Average with Exogenous Regressors (SARIMAX) methods in forecasting corn production. The study used monthly time series data from six administrative regions during the 2018–2025 period, with a total of 576 observations. The modeling was conducted using a multivariate approach involving historical production, harvested area, and satellite rainfall variables. The SVR model was optimized using the Radial Basis Function kernel and evaluated using Mean Absolute Percentage Error (MAPE). The results showed that SVR outperformed SARIMAX across all observation regions. The SVR model was able to handle extreme fluctuation patterns with error rates ranging from 5.58% to 15.01%, whereas SARIMAX produced significantly higher errors on production anomaly data. Therefore, SVR is considered more accurate in modeling the complexity of corn production and has the potential to be used as an early warning system to support regional food security policies.

Keywords: *Forecasting, Corn, SVR, SARIMAX, Fluctuation, Gorontalo.*

