

**MODEL PERSAMAAN PREDIKSI PRODUKTIVITAS CABAI RAWIT (*Capsicum frutescens* L.) AKIBAT FLUKTUASI IKLIM DI KECAMATAN NGAGLIK, SLEMAN, DAERAH ISTIMEWA YOGYAKARTA**

**INTISARI**

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Perubahan iklim merupakan salah satu indikator penting dalam budidaya pertanian terutama komoditas cabai rawit. Perubahan iklim yang signifikan berpengaruh terhadap produktivitas dari komoditas cabai rawit. Penelitian ini bertujuan memprediksi produktivitas cabai rawit, menganalisis dampak iklim terhadap produktivitas tanaman cabai rawit, dan mengembangkan penerapan model persamaan prediksi produktivitas tanaman cabai rawit. Metode yang digunakan yaitu penggunaan metode regresi linear, regresi linear berganda, dan ARIMA untuk memprediksi produktivitas cabai rawit di Kecamatan Ngaglik berdasarkan data historis curah hujan, suhu, kelembaban udara dan luas panen dari tahun 2010 hingga 2023. Model persamaan yang dihasilkan dapat digunakan sebagai tolok ukur produktivitas tahunan berdasarkan parameter iklim seperti curah hujan, suhu, dan kelembaban udara. Hasil penelitian menunjukkan bahwa perubahan iklim memiliki pengaruh terhadap produktivitas tanaman cabai rawit. Model persamaan prediksi yang diperoleh yaitu  $\text{Produktivitas} = -139 + 5,74 \text{ Suhu} + 0,00783 \text{ Curah Hujan}$ . Peningkatan Suhu dan curah hujan akan mempengaruhi dengan produktivitas dari cabai rawit di Kecamatan Ngaglik, Kabupaten Sleman, Daerah Istimewa Yogyakarta. Hasil penelitian ini membuktikan bahwa perubahan iklim berpengaruh terhadap produktivitas dan model persamaan dari prediksi menggunakan metode regresi linear dan ARIMA dapat digunakan dalam memprediksi produktivitas cabai rawit.

**Kata kunci:** Cabai Rawit; Regresi Linear; ARIMA; Produktivitas; Suhu; Curah Hujan

***EQUATION MODEL FOR PREDICTING CHILI PEPPER (*Capsicum frutescens* L.)  
PRODUCTIVITY DUE TO CLIMATE FLUCTUATIONS IN NGAGLIK DISTRICT,  
SLEMAN, SPECIAL REGION OF YOGYAKARTA***

**ABSTRACT**

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*Climate change is one of the important indicators in agricultural cultivation, especially the cultivation of cayenne pepper commodities. Extreme climate change affects the productivity of cayenne pepper commodities. Ngaglik District, Sleman Regency, Special Region of Yogyakarta is one of the sub-districts with potential in cayenne pepper commodities. The model of the equation for predicting cayenne pepper productivity using linear regression, multiple linear regression, and ARIMA methods can make it easier to handle climate change that will occur. This research was carried out to analyze the prediction equation model of cayenne pepper productivity, analyze the impact of climate on the productivity of cayenne pepper plants, and develop the application of the equation model for predicting the productivity of cayenne pepper plants. The methods used are descriptive, qualitative, and verifiable methods. The data used includes historical information on rainfall, temperature, air humidity, and harvest area in Ngaglik District, Sleman Regency, Special Region of Yogyakarta from 2010 to 2023. Data analysis was carried out statistically using linear regression analysis techniques to identify the relationship between climate variables and the productivity of cayenne pepper plants. The prediction picture from the regression analysis is illustrated using ARIMA which will predict productivity in the next year. The study results show that climate change influences the productivity of cayenne pepper. The resulting equation model can be used as a benchmark for annual productivity based on climate parameters such as rainfall, temperature, and air humidity. The prediction equation model obtained is  $Productivity = -139 + 5.74 \text{ Temperature} + 0.00783 \text{ Rainfall}$ . The increase in temperature and rainfall will affect the productivity of cayenne pepper in Ngaglik District, Sleman Regency, Special Region of Yogyakarta. The results of this study prove that climate change affects productivity and the equation model from the predictor using the linear regression method and ARIMA can be used in predicting the productivity of cayenne pepper.*

***Keywords:*** *Cayenne Pepper; Linear Regression; ARIMA; Productivity; Temperature; Rainfall*