

## INTISARI

### Model Prediksi Curah Hujan Dengan Metode *Exponential Smoothing Seasonal Planting Index* (ESSPI) Untuk Penentuan Pola Tanam

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Model prediksi curah hujan yang akurat dibutuhkan untuk mengatasi permasalahan pergeseran pola hujan. Model prediksi curah hujan untuk penentuan pola tanam menggunakan metode *exponential smoothing* direkomendasikan oleh *Food and Agriculture Organization* (FAO) untuk menggantikan model linier seperti regresi yang hingga sekarang masih banyak digunakan. Kelemahan model ini adalah inkonsistensi peramalan jangka pendek dan tidak akurat untuk peramalan jangka panjang.

Penelitian ini bertujuan untuk mengembangkan model baru prediksi curah hujan menggunakan metode *Exponential Smoothing Seasonal Planting Index* (ESSPI) yang memiliki tingkat akurasi tinggi. Tujuan berikutnya adalah menyusun kerangka teoritis metode baru pengelompokan data curah hujan berdasarkan *seasonal planting index*, metode baru penentuan nilai pemulusan ( $\alpha$ ) menggunakan metode *seasonal planting index*, dan model baru prediksi curah hujan menggunakan *seasonal planting index* untuk penentuan pola tanam padi. Pencapaian tujuan penelitian tersebut dilakukan melalui kegiatan : (1) mengembangkan model prediksi curah hujan menggunakan metode *exponential smoothing seasonal planting index*, (2) menentukan model spasial pola tanam berbasis data hasil prediksi curah hujan menggunakan metode *exponential smoothing seasonal planting index*, (3) membandingkan model prediksi curah hujan *exponential smoothing* standar dengan model prediksi yang diusulkan yaitu *seasonal planting index*, dan (4) membandingkan model pola tanam menurut kalender tanam Kementerian Pertanian RI dan hasil survey di daerah riset dengan model spasial pola tanam yang diusulkan.

Hasil perbandingan nilai ukuran uji antara model prediksi curah hujan *exponential smoothing* standar dengan model prediksi yang diusulkan menunjukkan bahwa model yang diusulkan mempunyai nilai akurasi prediksi yang lebih baik. Pengujian membuktikan bahwa model pola tanam yang diusulkan merekomendasikan pola tanam yang sama hasil survey dengan responden petani dan sama dengan keputusan Bupati Kabupaten Boyolali yaitu padi – palawija – bera. Model yang diusulkan merekomendasikan masa tanam 1 (November – Februari), masa tanam 2 (Maret – Juni), dan masa tanam 3 (Juli – Oktober) sama dengan masa tanam mayoritas responden. Zona agroklimat Kabupaten Boyolali adalah zona D menurut model yang diusulkan sama dengan keputusan Bupati Boyolali, berbeda dengan kalender tanam Kementerian Pertanian yang menggolongkan Kabupaten Boyolali ke zona B.

**Kata kunci :** Prediksi, curah hujan, *exponential smoothing*, *seasonal planting index*.

## **ABSTRACT**

### **Rainfall Prediction Model Using Exponential Smoothing Seasonal Planting Index (ESSPI) For Determination of Planting Pattern**

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So we need rainfall prediction models are accurate to overcome the problem of shifting rain patterns. Rainfall prediction model for determine cropping patterns using exponential smoothing method recommended by the Food and Agriculture Organization (FAO) to replace the linear model as a regression, which until now is still widely used. The weakness of this model is the short-term forecasting inconsistencies and inaccurate for long-term forecasting.

The purpose of this research to develop a new model rainfall prediction method Planting Seasonal Exponential Smoothing Index (ESSPI) which has a high degree of accuracy. The next goal is to develop new methods of theoretical frameworks grouping data based on seasonal planting rainfall index, a new method of determining the value of smoothing ( $\alpha$ ) using the method of planting seasonal index, and the new model uses seasonal rainfall prediction index for determining planting rice cropping pattern. Achievement of the objectives of the research carried out through activities : (1) develop a model rainfall prediction using exponential smoothing seasonal planting index, (2) determining the spatial model cropping patterns based on data from rainfall prediction using the method of exponential smoothing seasonal planting index, (3) comparing the rainfall prediction model with a standard exponential smoothing prediction model proposed were planting seasonal index, and (4) comparing models cropping patterns cropping calendars according to the Ministry of Agriculture of the Republic of Indonesia and the survey results in the research area with spatial model proposed cropping pattern.

The results of the comparison between the value of the test measure rainfall prediction model of exponential smoothing with the standards proposed prediction models indicate that the proposed model has a value of prediction accuracy is better. The tests proved that the model proposed cropping pattern recommends planting pattern similar survey respondents farmers and equal to the decision of Boyolali Regency, rice - crops - fallow. The model recommends planting 1 (November to February), the planting period 2 (March to June), and the growing season 3 (July to October) is equal to planting the majority of respondents. Agro-climatic zona is the zona D Boyolali Regency according to proposed model together with the decision of Boyolali Regency, in contrast with the Ministry of Agriculture planting calendar which classifies Boyolali Regency to zona B.

**Keywords** : Prediction, rainfall, exponential smoothing, seasonal planting index.