Studi Eksperimental dan Model Matematika Kinetika Proses Pengeringan Lapis Tipis Pisang Kepok
(Experimental Study and Mathematical Model of the Kinetics of the Thin Layer Drying Process of Kepok Banana)
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ABSTRACT

Drying is a method capable of removing part or even all of the water content in material by utilizing thermal energy. The drying process aims to remove water to inhibit deterioration. This research aims to identify the most accurate mathematical model for replicating the drying process kinetics, determine the browning index, determine the effective moisture diffusivity (Deff). The drying process uses a tray dryer with 5 tray arrangements. The drying process data will be tested against 15 thin layer drying kinetics models for kepok banana. The analysis are conducted on the coefficients of determination (R²), sum of squared errors (SSE), and root mean square errors (RMSE). The best replication results are the Hii and Others model on Tray 0, the Peleg model on Tray 1, the Diffusion Approach model on Trays 2-3, and the Wang and Singh model on Tray 4. The color change analysis is performed using the L*a*b* method to determine the browning index of the thin layer drying process of kepok banana. The lowest browning index occurs in Tray 1 with a value of 63,18. The Deff calculations for all trays range around 10^{-9} m^2/s. The purpose of calculating Deff is to determine the drying process speed.

Key Words: *Browning index, Drying kinetics, Mathematical model*