ABSTRACT

Regression analysis is a technique for analyzing and modeling one dependent variable and one or more independent variables. One application of this regression analysis is in biology, such as estimating when plants enter a slow growth phase (stationary phase). This study focuses on the Logistic growth model because this model is a type of simple sigmoid model and has three parameters so it is easy to interpret. The Logistic growth model is a type of intrinsically nonlinear model so that its parameter estimation requires the Nonlinear Least Square (NLS) method with an iterative algorithm, such as the Levenberg Marquardt algorithm. This study aims to obtain the best Logistic growth model based on the adjusted determination coefficient value (adjusted R-Squared) and parameter significance. The results showed that all parameters in the Logistic growth model were significant to the model based on the t-test results and the model had an adjusted R-Squared value of 0,957113. This value indicates that the model is able to explain 95,71% of the growth patterns observed in the data through the parameters that have been considered.

Keywords: Sigmoid Model, Logistic Growth Model, Levenberg Marquardt Method, Parameter Estimation