**Modelling growth of swietenia macrophylla (mahogany) plantation in Gum-Gum Forest Reserve, Sabah.**


ABSTRACT

Growth models can contribute to the forest management decision making process by providing stand development forecasts. Mahogany plantation in Gum-Gum Forest Reserve Sabah was planted in 1968 with spacing 2.74×2.74 m within an area of 0.52 hectare. Diameter at breast height (dbh) and tree height data were collected from year 1969 to 2006. This study aimed to determine the efficient regression equations for growth prediction of the mahogany plantation. Regression models were developed by search from literature as a basis references. Four diameter prediction models and six height prediction models were developed. Proc Reg in SAS was used to evaluate the regression equations. Performance of the model was measured by using root mean square error (RMSE), bias and coefficient of determination (R2). The chosen diameter prediction model is lnH=3.07-10.42D-1+0.1lnA with RMSE (0.31), bias (1.76) and R2 (0.68). The recommended prediction model slightly underestimated the actual diameter. The chosen height prediction model is lnD=354-3.98A-1 with RMSE (0.11), bias (0.01) and R2 (0.91). This recommended height prediction model gives very close height estimate to the actual height.



**Keyword:** Swietenia macrophylla; Growth; Prediction models.