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A Mixed-effects Height-Diameter Model for Pinus kesiya in Malawi

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Abstract

A height-diameter model was developed in order to predict the total height of individual trees in Pinus kesiya in Malawi. Six generalized height-diameter models were fitted and evaluated based on data set consisting of 18156 tree heights and corresponding diameters at breast height. The data were collected during three inventories of 332 permanent plots located in Chongoni, Malawi. A model including the diameter at breast height of the tree, stand age, site index, and basal area as independent variables was selected as the best model. To deal with the problem of among-unit variability, a non-linear mixed effects modelling approach was used to fit the selected model. The mixed model included a random parameter that affected the model and provided realistic height predictions. The equation developed represents a new tool for evaluation and management of Pinus kesiya stands in the region.

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Biography

Edward Missanjo is affiliated to Malawi College of Forestry and Wildlife, Dedza, Malawi. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect in his wide range of publications in various national and international journals. He is the Editorial Board Member and serves as a member of various associations, apart from being an author for many books.