

Abstract

Individual tree biomass equations were developed for a *Tarchonanthus* woodland and tested for their applicability in three woodland stands of *Tarchonanthus* at Naivasha Kenya based on the felled tree measurements. Three homogenous woodland stands identified via the use of cluster analysis formed the basic sampling units. Forty-five *Tarchonanthus camphoratus* trees of varying diameter classes from 2 cm to 28 cm were selected and felled from the three stand types. Alternative relationships were analysed and the four best models are presented (Tables 1 and 2). To test the accuracy of the developed models, a further fifteen trees per stand were felled and their dry weights calculated and compared with their estimated dry weights. For each model, validation was performed per stand with the aim of determining whether a particular model is applicable to a specific stand or to all stand types. The best model based on the adjusted R^2 , standard error of estimate and distribution of residuals is presented and compared with previously existing equations. The model uses the square root transformed form of biomass. It was concluded that the model presented here could be used to estimate tree biomass in all stands of the woodland dominated by *T. camphoratus*, which in many places produces nearly pure stands, excluding other woody species. The fact that the accuracy of estimation tended to vary slightly from stand to stand suggests that the model may only apply to this woodland and to any other whose structure does not differ significantly from it.