

Development of volume function for final felling of Pinus brutia Ten in Kurdistan Iraq

ABSTRACT

Planning for forest management depends upon the forest dynamics, which includes integration of all forest disciplines and understanding of forest resource characteristics including its growth dynamics. The forest growth and yield modelling can provide valuable information about forestry which can be used to determine harvest levels or allowable cut, and to analyze alternative stand treatments. Growth and yield models are generally used to predict the temporal development of forest stands. Knowledge of Diameter at Breast Height (DBH) and total tree height is fundamental to both developing and applying many growth and yield models [1]. Among the several available approaches in the yield prediction methodology, the multilevel model approach, which is a statistical technique, found to be commonly used in many fields of study for generating improvements in parameter estimation. A volume estimation of a forest stand is a good example. Volume estimation in the form of volume function and volume table has been widely used for many different purposes in forestry for more than hundred years including forest plantations and an inventory for timber harvesting. In view of the importance of these functions in forestry, this study was conducted with the main aim to develop a volume function for *Pinus brutia* Ten, which is a very common forest tree species planted in northern Iraq. The least squares method was used to fit eight unweighted volume equations including two logarithmic transformed equations and seven weighted forms of volume equations to volume data of a 25-30 years old *Pinus brutia* Ten plantation. The best fit equation was done using Furnival's index.

Keyword: *Pinus brutia* ten; Volume equation; Least squares regression; Furnival's index; Volume correction factor