International Journal of Forestry and Crop Improvement
Volume **3** | Issue 1 | June, 2012 | 1-7

Research Article

Height-age growth curve modelling for different multipurpose tree species in drylands of north Karnataka

S.B. DEVARANAVADGI, PRADEEP RATHOD, S.Y. WALI AND S.L. MADIWALAR

Abstract : Among 12 multipurpose tree species tested for height and age relationship under agroforestry systems of northern dry zone of Karnataka, Gompertz model and Weibull model fitted well for 4 species each, Exponential model for 3 species and only one species showed its fitness to Richards model. Among the different models tried in predicting height growth, Gompertz model was well fitted to Acacia nilotica (R^2 = 0.9981), Bahunia purpurea (R^2 = 0.9971), Inga dulce (R^2 = 0.9968) and Tamarindus indica (R^2 = 0.9968). Where as, Weibull model fit well for Leucana leucocephala (R^2 = 0.9987), Dalbergia sissoo (R^2 = 0.9978), Eucalyptus citriodara (R^2 = 0.9982) and Pongamia pinnata (R^2 = 0.9991). Hence, Gompertz model can be best adopted while predicting height growth of native species grown under dry land situation.

Key Words : Height, Age, Model, Species, Multipurpose

How to cite this Article : Devaranavadgi, S.B., Rathod, Pradeep, Wali, S.Y. and Madiwalar, S.L. (2012).Height-age growth curve modelling for different multipurpose tree species in drylands of north Karnataka, *Internat. J. Forestry & Crop Improv.,* **3** (1) : 1-7.

Article Chronical : Received : *24.01.2012;* Revised : *25.03.2012;* Accepted : *30.04.2012*

INTRODUCTION

Tree height and diameter relationship is an important component in yield estimation, stand description, and damage appraisals (Parresol, 1992). Many height and diameter equations have been developed for various tree species (Wykoff *et al.,* 1982; Huang *et al.,* 1992). Among the variety of mathematical equations, sigmoidal or non-linear growth functions are widely used in developing tree height and diameter equations. Foresters often use height-diameter models to predict total tree height (c-I>) based on observed diameter at breast height (DBH) for estimating tree or stand volume and site quality. Therefore, estimations of tree or stand volume and site quality rely heavily on accurate height-diameter functions. There is no standard height/age relationship for trees because of the influence of both internal and external factors on height growth but the basic pattern is sigmoidal.

Growth models assist forest researchers and managers in many ways. Some important uses include the ability to predict future yields and to explore silvicultural options. Models provide an efficient way to prepare resource forecasts, but a more important role may be their ability to explore management options and silvicultural alternatives. For example, foresters may wish to know the long-term effect on both the forest and on future harvests of a particular silvicultural decision, such as changing the cutting limits for harvesting. With a growth model, they can examine the likely outcomes, both with the intended and alternative cutting limits, and can make their decision objectively. The process of developing a growth model may also offer interesting and new insights into the forestry. Growth models may also have a broader role in forest

MEMBERS OF RESEARCH FORUM

Author of the Correspondence :
S.B. DEVARANAVADGI, Department of Farm Forestry, College of Agriculture, BIJAPUR (KARNATAKA) INDIA
Email : dnavadgi@rediffmail.com

Address of the Coopted Authors :
PRADEEP RATHOD, College of Agriculture, BIJAPUR (KARNATAKA) INDIA

S.Y. WALI, Department of Agronomy, College of Agriculture, BIJAPUR (KARNATAKA) INDIA

S.L. MADIWALAR, Directorate of Research, College of Agriculture, BIJAPUR (KARNATAKA) INDIA