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**CONSTRUCTION OF A GROWTH MODEL TO PREDICT
INDIVIDUAL STEM VOLUME FOR *Eucalytus grandis*
PLANTATION IN PIDURUTALAGALA AREA IN
NUWARA ELIYA**



BY

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ABSTRACT

Timber volume is the most crucial variable in commercial forest plantations. Therefore model construction for *Eucalyptus grandis* to predict the main stem volume for individual trees precisely.

The study was carried out in Pedruthalagala area in Nuwara Eliya district because the selected plantation is well matured and at the felling age. The circular sampling plots of 0.02 hectare were decided to obtain the required tree measurement.

Diameter at breast height, total height, diameter at different height levels were taken by using the instruments such as diameter tape, Blume Leiss altimeter, and Spiegel relaskop. All together 14 such plots were used to take the measurements.

The basic relationship was developed using the equations volume = form factor * basal area * height. Because form factor is difficult to quantify, it was tried to replace it by using the plantation attributes such site quality, age etc.

At the first phase of this study 12 equations were selected and after a series of rigorous testing, such average model bias, efficiency, residual distribution and R^2 , two models were selected for the use in the field. These models are follows

$$1. \text{ vol} = 0.147(g*h) + 0.00839_{\text{top}}$$

$$2. \text{ vol} = 0.147(g*h) + 0.637_{\text{top}/\text{age}}$$

Where:

$g*h$ = basal area

tpp = top height

top/age = top height / age

g = diameter

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