TEAK VOLUME MODELLING USING MEAN TREE MEASUREMENTS

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Volume prediction at a known precision is essential especially for planners to make decisions on forest management. Thinning planning, harvesting, timber utilisation for all such activities should be planned based on economical returns, to obtain maximum benefits from these man made forest plantations. Based on the dominant height growth variations, three Teak zones were identified. In each teak zone several teak trees were felled and true volumes (total Volume and the Timber Volume) were calculated and Volume functions were developed for each Teak zone. These volume functions were developed using mean tree growth measurements of a stand. Therefore it is not to be used to determine volumes of individual trees but to calculate the per hector volume of a stand by measuring the mean parameter values of a stand.

The volume of a felled tree was obtained by adding volumes of its components. In the log volume calculation the "Huber's" equation was used, this equation gives reliable estimates for any shape of logs other than "neloidic" shape. The Diameter at Breast Height (DBH) and the total height of the tree was recorded before felling the tree. The models tested for better fitting were;

$V = a + b*DBH^2 * Height$ ..... (1)
$V = a + b*DBH^2 * Height + c* Height$ ..... (2)
$V = a*DBH^b*(Height)^0$ ..... (3)
$V = a + b*(DBH^2) * Height + C*(DBH)$ ..... (4)

In all three zones the best fits obtained for volume estimation was model 3. This model has obtained high correlation in all three zones compared to other models tested.

The volume functions obtained for mean tree volume estimation in three Teak zones are;

Zone 1: $V = .000013 * (DBH)^{2.5110} *(Height)^{.724}$

Zone 2: $V = .000102 * (DBH)^{1.9063} *(Height)^{.795}$

Zone 3: $V = .000102 * (DBH)^{1.8885} *(Height)^{.815}$