

## The effect of quality attributes in determination of price for plantation-grown Teak (*Tectona grandis*) logs in Sri Lanka

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**Abstract.** Teak (*Tectona grandis*) is one of the highly demanded timber species in Sri Lanka. When buying teak logs, customers assess their quality by visual appraisal of surface characteristics such as visible defects. Hence, the buyers' preference for logs with desired attributes is reflected by the price achieved in the market. In this study, we examined the influence of visually observable quality attributes of plantation grown teak logs on their market price. A set of 650 randomly selected teak logs were assessed for dimensions, shape defects, surface defects and end-defects. Length of the log, mid-circumference (under bark), diameter at top-end and butt-end, number of knots per meter, average diameter of the knots, bend fraction, percentage of heartwood, shape of the log, presence of buttress, position of the hollows, presence of felling damages, splits and heart rot were recorded using standard methods. Selling prices of logs were obtained from the records of log storing facilities. By using the multiple linear regressions, a price-quality model was developed to explain the impact of quality attributes on selling price. The regression model achieved a strong coefficient of determination ( $R^2$ ) of 0.87. Accordingly, the length, mid-circumference, number of knots per meter, bend fraction, hollow position, presence of buttresses and presence of heart rot were found to have a significant influence on the price. The relative price reduction due to presence of a specific log defect was further examined using the derived price-quality model. The presence of high number of knots had the highest detrimental impact on price, followed by the higher bend fraction, presence of hollows at top end and/or middle of the log, presence of heart rot and presence of buttresses respectively. These findings have implications in the improved management of teak plantations. **Keywords** wood quality attributes, timber defects, buyers' preference, hedonic pricing, price-quality model

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