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Effect of Tree Density and Tapping Techniques on Productivity of Gum Talha from *Acacia Seyal* Var. *Seyal* in South Kordofan, Sudan

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Abstract

This study was carried out in Umfakarin natural forest reserve, South Kordofan, Sudan. The objective of the study was to investigate the influence of tree density and tapping tools on productivity of gum talha from *Acacia seyal* Del. var. *seyal* and also to examine the probability of *Acacia seyal* in producing gum talha when exposed to tapping techniques. Data for the study were collected during September 2007 to February 2008. A total of 167 individual trees of *Acacia seyal* grown in pure natural stands, in dense, medium and slight strata, were selected based on diameter at breast height (DBH ranged from 6.7 to 36.9 cm). In order to investigate the influence of tapping on gum yield, trees were exposed to tapping on 1st of November using local tools (saunkey and makmak) in addition to untapped trees used as control. Nine treatments i.e. a combination of 3 strata × 3 tools were executed. Comparison of means, correlations and logistic regression model were applied. The results of the study indicate that individual trees of *Acacia seyal* in different strata are varied in gum yield. The overall mean of gum yield was 13.68 g/tree/season. Average yield per tree/season was 7.1, 11.0 and 22.8 g in medium, dense and slight stratum respectively. Non producing trees comprise almost more than 50% of the total sample. 73% of the selected trees were produced gum below 10 g/season. Although tapping trees using makmak in slight stratum produced highest gum yield (25.78 g/tree/season) the results of the study show no significant differences between the treatments in gum yield. The outcomes of logistic regression model showed that 59.3% of the predictions were correctly classified. However, when other variables are incorporated, 64.7% of the predictions were correct. The results of the study may be of great importance for future studies in order to improve the predictions of gum talha yield and to manage *Acacia seyal* tree for multipurpose objectives.

Keywords: *Acacia seyal*, gum talha, logistic model, Umfakarin natural forest reserve