Assessing the Influence of Provenances of *Acacia senegal* tree species on Gum Arabic Yield in Western Sudan

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# Abstract

A two factors (provenance and time of tapping) experiment was conducted at Demokeya reserved forest to evaluate the impact of provenances of *Acacia senegal* tree species on gum arabic yield. In despite of the importance of the gum arabic as non-wood forest product and its wide range of utilization, there was still a considerable gap still remaining uncovered. This study is aimed at assessing the influence of provenances of (*Hashab)* tree on gum arabic yield. In this experimental research forest, we brought Acacia senegal seeds from seven natural origins (provenances) and planted in this testing site to study the impact of provenances on gum yield in new habitat. In this study we select six out of seven provenances, three from sandy soil origin and three from clay soil origin. The experiment was arranged in randomized complete block design with three replications, each experimental unit was represented with five trees of mature Hashab tree. The experiment repeated two consecutive seasons. The result of the statistical analysis presented a highly significant (p=0.001) effect of interaction on the gum yield in the first, second and the combine analysis of the two seasons. Additionally, in the first season and combine analysis provenances gave significant (p=0.05) and a highly significant (p=0.01) effect on gum yield. The sandy soil origin trees were better than the clay soil group in mid-October tapping (118.25, 82.27 and 77.62 Kg/tree compared to 38.33, 40.44 and 47.34 Kg/tree) from the other hand in mid-November the result was opposite to sandy soil group as affected by the date of tapping, whereas the first November remain un stable through the two origins. This result shows the effect of provenance is seem to be stronger than the effect environment of the new habitat. So, the study recommends a great consideration should be given for provenance of Hashab origin when need to be tap. It is also better to tap the sandy soil origin trees in October and the clay soil origin in November for increasing productivity of gum arabic more than 50%.

Key words: Gum arabic, Demokeya, Provenance, Hashab, Acacia senegal