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Assessment of Local Knowledge and Traditional Uses of *Acacia senegal* in Rural Areas of North Kordofan, Sudan

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Abstract: This study was conducted in rural villages of North Kordofan State, Sudan in the year 2013. The study assessed the local knowledge related to the different uses of all parts of *Acacia senegal* (Gum Arabic tree). The study also investigated the role of this local knowledge in protection and conservation of *Acacia senegal*. Primary quantitative and qualitative data were collected from the social survey, direct interview and group discussion. Thirty (30) questionnaires were randomly distributed among the rural community who produce and practiced gum tapping and collection. The interview covered also those who use *Acacia senegal* for medicinal purposes and traditional uses as jobs. Content analysis and descriptive statistic analysis were applied. The study come out with results where the main findings are: *Acacia senegal* is multi-purpose tree. Each part of this tree (roots, root nodes, bark, wood, leaves, flowers, gum, pods and seeds) is used in special traditional or medicinal use. There were about (50) traditional and local uses for the *Acacia senegal* parts. People use different parts of *Acacia senegal* as food, drink, medicine, culture, believes and norms. Hundred (100 %) of the people acquired their local knowledge from their ancestors and local environment. Poems, wisdoms and says related to *Acacia senegal* played effective role in protection and conservation of the trees. It contributed to conservation of large areas of *Hashab* gardens. The study concluded that *Acacia senegal* in North Kordofan is the valuable tree due to its wide range of distribution and uses. It is recommended that, this local knowledge should be originated, documented and transmitted among the comer generation so as to assure protection and conservation of *Acacia senegal*.

Keywords: *Acacia senegal*, Gum Arabic, traditional uses and medicinal uses

1 Introduction

Strengthening knowledge of, and respect for, traditional sacred sites has significant potential for conserving *Acacia senegal* trees (Bruce et al, 2001). Culture in general is the complex of all skills and habits that a human belonging to a society has gained (Harris, 1989). The relationship between people and the land is a matter of spiritual concern, and such religions have been called "profoundly ecological" (Schoffeleers, 1978).

Studies of sacred forests and other sacred sites throughout Africa show that religious and spiritual beliefs can sometimes be the motivation for conservation and environmental protection (Dorm-Adzobu et al., 1991; Ntiamoa-Baidu, 1995; Omari, 1990; Schoffeleers, 1978). Spiritual or religious values can motivate conservation of natural resources. *Acacia senegal* var. senegal (Gum Arabic tree) (Hashab) is recognized as tree with a flat or rounded crown and rough non-papery and non-peeling bark (Chikamai, 2012). The tree leafs and pods are used as fodder for cattle, sheep and camels. Older trees are often cut down and used as fuel, for charcoal making.

Gum arabic trees can be used for construction materials. Indirectly, deep roots and extensive lateral roots system on gum arabic producing trees reduce soil erosion and water run-off. Some gum arabic producing tree species are good for the bush-fallow and intercropping farming system prevalent in western Sudan. *A. senegal* trees fix nitrogen and it serve as wind breaks. The gum arabic belt acts as a buffer against desertification (Elrayah et al 2012).

This paper aimed specifically to assess the local knowledge related to the different uses of all parts of *A. senegal* and to investigate the role of local knowledge in protection and conservation of *A. senegal*.

In this paper, terms such as "traditional," "local," and "cultural" were used, recognizing the reservations held by some social scientists about the validity and utility of such constructs. These terms were often used by local people used in discussing their situation with us. Thus, this study deals directly with the issue of cultural dynamism and change and its role in conservation of the *Acacia senegal*.

2 Materials and Methods:

2.1 Study area:

Sites of special interest for traditional knowledge study and local uses of *Acacia senegal* were identified. *Um Habila* village is located in South East Elobied in the main road of Elobied-Khartoum. The dominant trees in the area are *Acacia senegal*. The trees are naturally grown in and around the village. Farmer since decades used to replant and manage *Acacia senegal* gardens. In *Um Dabos* villages and Bara locality, *Acacia tortilis* scattered all over the place. Nevertheless, *Acacia senegal* is found naturally grown in North and East of the area. Both areas are pioneer in gum arabic production, people have accumulated deep experiences in production, tapping and using of *A. senegal* trees.

2.2 Data collection and Analysis

Thirty questionnaires were randomly distributed among the rural community who produce and practiced gum tapping and collection. The interview covered also some people who use *Acacia senegal* for traditional medicinal purposes as jobs. Explorative survey methods and participatory observations were used. We followed a purposive sampling technique, by semi-structured and open interviews. Content analysis and Statistical Packages for Social Sciences (SPSS) was used and Microsoft Excel was used too.

3 Results and discussion

3.1 Assessment of different uses of *Acacia senegal tree*

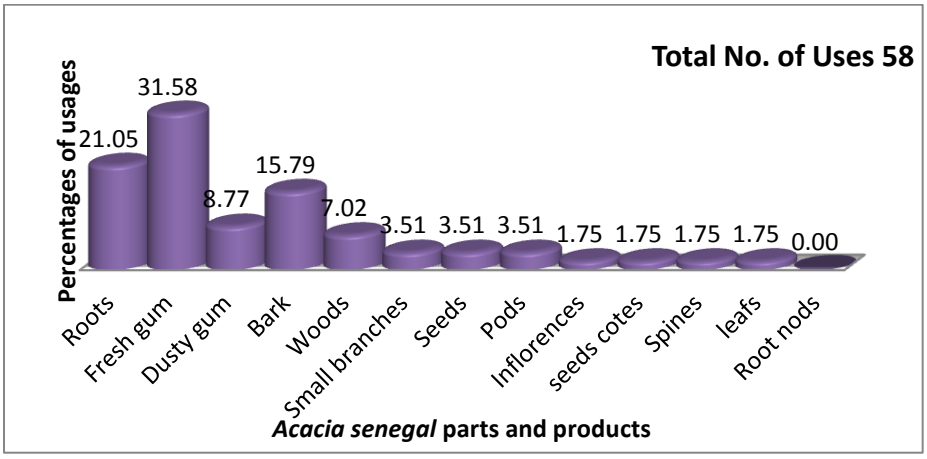

Figure 1Different uses of Acacia senegal parts and products in North Kordofan

Results of analysis showed that *Acacia senegal* is multi-purpose tree. The local and traditional knowledge related to the tree varies from area to another across the gum arabic belt. In this study 58 uses were recorded. The uses of each part of the tree or its product depend on how much knowledge the people had. It also depends on how and how often do people practice and use.

3.2 Traditional uses of *Acacia senegal*

Acacia senegal has medicinal, nutritional, folkloric, heritage and agricultural uses. The gum powder and gum runny are used in traditional ink preparation (mixture of gum and charcoal); it is widely and preferably used in teaching all over Holly Quran Traditional Schools (HQTSs) which is locally known "*Kalwa*". Gum arabic is also added to juice to get soft texture and as an emulsifier and a suspension agent in the local house-made juices. Dusty gum and impurity gum are usually mixed with animal waste, mud and water and left for a week to be fermented. Afterwards the product is used for painting house which is constructed by to prevent from heavy rain effects. Gum arabic is also used in traditional paints. School

children mixed gum with sugar to make glue for sticking their smashed and shattered books, shattered papery currency and book notes. Nutritionally, Fresh wet gum is directly eaten by people as foodstuff; it does not have any side effect or stomach disorders. People reported that it is edible and easily digested. The tree bark, flowers and pods as used as fodder for goats. Medicinally, gum arabic used for stomach disorders and kidney pains. The bark is used for injury healing and cure. Leafs are also used as fodder. Agriculturally, *Acacia senegal* is practiced as a basic component of Agroforestry in North Kordofan not only in ancient time but even today. There are many valuable poems and wisdoms said by rural people related to *Acacia senegal.* Poems, wisdoms and says related to *Acacia senegal* play effective role in protection and conservation of the trees. It contributed to conservation of large areas of *Hashab* gardens.

4 Conclusion and recommendation

To sum up, *Acacia senegal* in North Kordofan is the valuable tree due to its wide range of benefits and uses. It is recommended that, local knowledge related to *A. senegal* should be originated, documented and transmitted among the coming generations to guarantee protection and conservation of *A. senegal* trees.

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