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Natural Regeneration of *Boswellia papyrifera* (Del.) Hochst. A
Key Dryland Tropical Species in Northern Ethiopia

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Abstract

Boswellia papyrifera (DEL.) HOCHST belongs to a tropical family called *Bruceraceae*, which contains up to 600 species in 17 genera. The family is characterized by the production of aromatic oil or resins. The resin from *B. papyrifera* is used as frankincense, which has been burning in the Roman Catholic, Greek Orthodox, and Coptic Churches throughout the world. Moreover, it has also numerous environmental, socio-economic, traditional and industrial benefits. Frankincense is a raw material in perfume, paint, paper-making and pharmaceutical industries. Hence, it is one of export earning commodities for Ethiopia and other countries. Nevertheless, the species is on the verge of extinction. It has been categorised as a species which needs priority in the conservation of medicinal and wildlife resources in east and southern Africa by various international organisations. This paper reviews the biology, ecology, methods of harvesting, and uses of the species both at national and international levels. It also depicts the plight conditions of the species through the results of a research work aiming at monitoring natural regeneration under two management situations in northern Ethiopia. The two management strategies are either to enclose *Boswellia* stands from livestock grazing and cutting, or allow free grazing but no cutting of trees. 64 plots with a size of 20 m × 20 m (32 in each management) have been located randomly in *Boswellia* growing sites in Tigray, northern Ethiopia. These plots have been assessed four times during 2000–2001. In all plots, newly emerging saplings have been counted and all species were identified. Moreover, diameter, height and frequency of trees have been recorded. Results of vegetation analysis are presented using species diversity, density, frequency and important value index. Other ecological indices are also computed. The study highlights management options to replenish this economically and ecologically important species.

Keywords: Area enclosure, *Boswellia papyrifera*, natural regeneration, vegetation analysis