



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs”

Targeting the Challenges of Agro-Forestry System Disappearance under Rapid Commercialisation: Factor Affecting Farmers Land Use Options in Gum Belt of Western Sudan

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Abstract

Agro-forestry is seen as a better farming management strategy for a sustainable farming system to stabilise rural economies in developing countries. Concurrently, some established systems are being lost. Sudanese gum arabic production system is now facing the challenge of the acacia's land conversion into commercial field cropping enterprises, with even more adverse impact on the smallholders' welfare and intimidates the system sustainability. Gum arabic is an important non-wood forest product (NWF) obtained from *Acacia senegal* tree. Sudan accounts for nearly 80% of the world production and controls 60% of gum arabic world market. Gum arabic is also a significant source of cash income for the peasant communities occupying the gum belt, it accounts for 15% of the gum arabic producers' income and 10% of other farmers. However, its production has slumped over the last three decades. This paper intended to analyse the determinants of agro-forestry system practice and to assess the impact of commercialisation on the farm household resources allocation decision in the gum belt in dryland agriculture in western Sudan. Results from commercialisation index (C1) and Two-Stage Least Square model (2SLS), confirms a positive significant influence of commercialisation as well as the investment in livestock on production of food crops. Furthermore, results from the probit model revealed that, adequately attractive price level equivalent to off-farm income will provide a motivation for sustainable gum Arabic production system. Finally, household decisions to allocate more resources to cash crops, access to market and investment in livestock to ameliorate the risk appear to justify these resources allocation under degraded agricultural production environment. Therefore, increased farm gate prices for gum Arabic producers will provide an incentive to use the land in gum Arabic agro-forestry system to lead to win-win situation by enhancing cash and food crops productivity and environmental stability.

Keywords: 2SLS, Acacia, commercialisation index, dryland, gum, Sudan