



Tropentag, September 14-16, 2010, Zurich

“World Food System —
A Contribution from Europe”

Where the Land is Greener - Some Evidence from the Impact of Sustainable Land Management in the Senegalese Sahel

JULIE GWEN ZÄHRINGER¹, JEAN-PIERRE SORG², HANSPETER LINIGER³

¹*Group for Forestry in Developing Countries, Department of Environmental Sciences, Institute for Terrestrial Ecosystems, Switzerland*

²*ETH Zurich, Department of Environmental Sciences (D-UWIS), Switzerland*

³*University of Bern, Centre for Development and Environment (CDE), Switzerland*

Abstract

Land degradation is a big concern in semi-arid landscapes and land users are applying a wide range of sustainable land management (SLM) technologies in order to mitigate this threat. Vegetation cover through tree species is important for reducing wind and water erosion through soil stabilisation, improving soil fertility and water availability and at the same time providing resources for humans and cattle. Many SLM technologies are therefore based on the improvement of vegetation cover. The WOCAT (World Overview of Conservation Approaches and Technologies) database aims at documenting the local SLM knowledge and distributing it around the globe.

Several agroforestry and forestry technologies applied by local land users in a silvopastoral and an agropastoral region in northern Senegal were documented for the WOCAT database. Parameters of woody vegetation were investigated at SLM sites and the conventional land use system in the respective area. The aim was to see if tree biodiversity parameters, canopy cover and regeneration density were higher under sustainable than conventional land management. In addition, it was tested if SLM technologies increased the availability of tree species useful to the local population.

In the silvopastoral land use system tree density, species richness and diversity and canopy cover were significantly higher at sites under SLM than under the conventional land management systems of extensive pastoralism and crop production. The same applied to tree regeneration. SLM technologies further harbored higher densities of trees providing fodder, food or medicine than sites under CLM. For the agropastoral land use system no general difference of vegetation parameters was found between SLM and CLM but single SLM technologies either had higher trees species richness and diversity or higher tree density than the CLM of extensive pastoralism. In general regeneration of tree species was rare in the majority of the assessed land use types in the silvopastoral as well as the agropastoral land use system (the two prevailing land use systems in the North). This indicates that despite the variety of sustainable land management technologies applied, vegetation cover in northern Senegal is facing decline and specific action is needed in order to avoid further land degradation.

Keywords: Agroforestry, land degradation, Sahel, sustainable land management, WOCAT

Contact Address: Julie Gwen Zähringer, Group for Forestry in Developing Countries, Department of Environmental Sciences, Institute for Terrestrial Ecosystems, Baumackerstr. 51, 8050 Zürich, Switzerland, e-mail: juliez@ethz.ch