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Permaculture as Efficient and Environmentally Sound Agro-Forstry Approach for Smallholders in Sierra Leone

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Abstract

More than 50% of the Sierra Leonean population is concerned with agriculture. Nevertheless, a considerable amount of people is food insecure. Efficient, environmentally adapted strategies for food production are sought to overcome food deficiency. At the same time, the quality of the food has to reduce nutrient deficiency (“hidden hunger”) of children significantly.

Therefore, we decided to combine intensive horticultural sustainable food production, with agro-forestry, namely with the integration of native fruit trees and exotic *Moringa oleifera* trees in a so called permaculture approach.

Permaculture integrates design principles reflecting whole system thinking, simulating, or is directly utilising resilient features observed in natural ecosystems. Permaculture includes integrated water harvesting methods and resources management that develops regenerative and self-maintained habitat and agro-forestral systems.

The twelve principles of permaculture include Observe and Interact, Catch and Store Energy, Obtain a Yield, Apply Self Regulation and Accept Feedback, Use and Value Renewable Resources and Services, Produce No Waste, Design From Patterns to Details, Integrate Rather Than Segregate, Use Small and Slow Solutions, Use and Value Diversity, Use Edges and Value the Marginal, and Creatively Use and Respond to Change.

To be successful with such an complex approach we started to build up the *Moringa* Start-up and Innovation Centre (MOST) in the peri-urban area of Waterloo, Sierra Leone. Together with local people, a plantation of the under-utilised multi-purpose tree *Moringa oleifera* is currently installed, followed by annual and biannual crops in two and three dimensional rotation systems. As a first step, the aim is a high crop diversity for subsistence and local markets. The first *Moringa* biomass will be used for Hugelculture systems and at the same time for the starting of water harvesting and nutrient recycling systems what finally will result in a production widely independent on agro-chemicals. The second step, production of processed *Moringa* products is already anticipated and a factory built.

During the installation of MOST concurrent multi-level discussion of observations with all stakeholders and teaching of smallholders of the neighbourhood will take place to create awareness for the huge potential of permaculture.

Keywords: Food security, Moringa, permaculture, Sierra Leone

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