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"Global food security and food safety:
The role of universities"

Multiplying Forest Garden Systems Financed by CO_2-Subscription Schemes

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Abstract

On abandoned, erosion prone terraces in the middle hills of Nepal, >200 participating farmer families planted 50,000 mixed trees in forest garden systems since 2015. All trees were planted with farmer-made organic biochar-based fertiliser. Planting pits were mulched with rice straw and were pipe irrigated from newly established water retention ponds during the 7 months of the first dry season after planting. A peer control system of farmer triads ensured an efficient maintenance of the plantations. Tree survival rate was above 80 % after one year. In between the young Cinnamon, Moringa, Mulberry, Lemon, Michelia, Paulownia, nut and other trees, secondary crops were cultivated such as ginger, turmeric, black beans, onions, lentils, all with organic biochar-based fertiliser and mulching.

The objective of this forest garden project was to establish robust social-agronomic systems that can be multiplied from village to village for increasing soil fertility, protecting abandoned terraces from erosion, replenishing natural water resources, generating a stable income with climate-smart agriculture, as well as capturing and sequestering atmospheric carbon.

The 50,000 mixed trees accumulate the equivalent of 700 t CO_2 per year (on a 10-year average). To monetize these carbon sequestration services, the project established a monthly CO_2-subscription that creates a personal link between private GHG-emitter in Europe and the carbon sequestering farmers in Nepal. At 35 € per ton of CO_2, the CO_2-subscription covers the cost for the forest garden set-up and the carbon certification. Moreover, farmers receive carbon payments for each survived tree during the first three years. After this initial period of three years, the income from tree crops (fruits, nuts, medicine, essential oil, silk, perfume, honey, timber, animal fodder) exceeds by far the (catalyzer) carbon credits (average crop income for 10,000 trees including secondary mixed cropping > 70,000 Euro).

In our presentation, we will show and document the establishment of the forest garden systems, and discuss the link between local carbon sequestration and global carbon markets, the carbon calculation and certification procedures, and the challenge for multiplying such systems inter-regional and internationally.

Keywords: Biochar based fertilisation, carbon credits, forest garden

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