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## Rehabilitation of Degraded Lands through Agroforestry System at Rajasthan and Odisha, India

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### Abstract

Land degradation is a complex and continuously occurring phenomenon caused both by nature and human actions. Land degradation is a threat to sustainable livelihoods globally and spreads across all major ecologies. This study reports data from assessment of rehabilitation work done, a decade ago, in a region with semi-arid ecology in Rajasthan and in a sub-humid area in Odisha, India. It presents lessons learnt on the extent, to which degraded lands can be rehabilitated through agroforestry interventions.

A decade ago, rehabilitation interventions were carried out at three degraded areas in Rajasthan and two in Odisha. These interventions mainly included, 1) biological - assisted regeneration of natural vegetation and seeding with local tree and fodder species, 2) social - fencing to protect vegetation from grazing, and limiting the biomass harvesting, and 3) physical - making small check dams and anicuts, etc. The fields where no interventions were carried out (control) were compared with the rehabilitated fields through the Before and After in Control and Impacted (rehabilitated) Plot (BACIP) model with measurements on soil physical, chemical and hydrological properties, and vegetation.

Most land in the study areas were severely degraded and had very low biodiversity, vegetation cover, soil fertility and productivity. After a decade of rehabilitation interventions, the soil properties in general exhibited only small changes, but interventions led to a clearly noticeable improvement in vegetation cover, both in species diversity and biomass, and in hydrological parameters. The rehabilitated fields had mixed vegetation; trees, shrubs and grasses, whereas the control fields featured mostly scrubby vegetation and grasses. These results point out the high potential of agroforestry systems for bringing degraded lands into productive and economic use.

**Keywords:** Agroforestry, degraded lands, rehabilitation, soil properties