



Comprehensive impact assessment of resource conservation measures in watershed of eastern region of India

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Abstract

A comprehensive study was carried out to assess the impact of watershed development activities in a tribal dominated watershed in the Eastern Ghats region of Odisha. The average potential soil erosion rate (PSER) in watershed for pre- and post-project period was estimated to be 30.24 t ha⁻¹ yr⁻¹ and 25.03 t ha⁻¹ yr⁻¹, respectively. The average estimated runoff in the watershed decreased to 14.6% during post-project period from 24.4% in the pre-project period. Yield of all the crops increased by 3 to 15% with overall average increase of 9.14%. Maximum water productivity was observed in the upland paddy (0.45 kg m⁻³) followed by maize (0.38 kg m⁻³), lowland paddy (0.3 kg m⁻³), red gram (0.18 kg m⁻³) and ragi (0.17 kg m⁻³). Water productivity of vegetables in watershed varied between 2.4 kg m⁻³ (beans) to a maximum of 5.7 kg m⁻³ (cabbage) of water. The average energy efficiency of rain-water (EERW) for the crops grown in watershed area was 5.53 MJ m⁻³ of rainwater which was equivalent to 1.32 kcal l⁻¹ of rainwater. The average carbon sequestration potential was 2.12 and 3.4 t ha⁻¹ yr⁻¹ after 10 and 20 years, respectively worked out from the plantation area. The average human population carrying capacity (HPCC) of crops increased by 9.3% due to enhanced productivity of crops. The technical man days actually involved in different phases of watershed development was also worked out. All these indices showed positive ecological and economic impact of watershed development works and could be used as technical reference for further refinement and future assessment.

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