

ASSESSMENTS OF SOCIAL, ECONOMIC AND ECOLOGICAL IMPACTS OF BENCH TERRACE PRACTICES; A CASE OF MAY-TUEM AND LAELAY-LOGOMTY VILLAGES, ADWA DISTRICT, ETHIOPIA

Kiros Gebretsadik, Muruts Hagazi and Hagos Hadgu

Aksum University, Ethiopia

Land degradation, low agricultural productivity and poverty are critical and closely related problems in the Ethiopian highlands. Attempts have been underway to control the land degradation problems for decades in Ethiopia; particularly in Tigray region. Bench terracing is one of the oldest traditional means of saving soil and water on sloppy areas. Now it is familiarized in modern approach on degraded hillsides of Tigray region by governmental and non-governmental organizations. The study was aimed to assess the social and ecological impacts of bench terrace practice in Adwa district. Data collected from landless youth beneficiaries, as well as plant species abundance, biomass and biomass carbon were analysed. The study revealed that bench terrace has created job opportunities, reduced migration and improved work habit of the community, changed farmers' perception, provided onsite and offsite benefits. Ecologically, species abundance was enhanced by 83% in bench terraced hillsides than adjacent non-bench terraced hillsides in Laelay-Logomty and by 133% in May-Tuem areas. 6.28 and 3.34 Mgha⁻¹ of biomass and 32.14 and 28.34 Mgha⁻¹ of ecosystem carbon (including soil carbon) have been obtained from bench terraced area in Laelay-Logomty and May-Tuem, respectively. Laelay-Logomty site had better in woody tree and shrub biomasses (3.89±0.35 tonha⁻¹) followed by May-Tuem site (1.31±0.32 tonha⁻¹). About 12 ha of arable land created for fruit and vegetable land for neglected non-productive neglected mountain. Bench terrace lowers the soil bulk density than the non-bench terraced hillsides as there is high organic matters accumulation that makes the soil squashy and more pores which promotes for favourable root growth, enhancing infiltration, enhancing soil water holding capacity and reducing runoff. As bench terrace is environmentally sound having imperative social, economic and ecological benefits if implicated on degraded hillsides, it should be scaled up and scaled out to other areas of the region.

Kiros27@yahoo.com