

Carbon sequestration in above ground biomass under closed management system in the dry lands of northern Ethiopia

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Abstract

Area closure is a widely practiced intervention of restoring degraded lands in northern Ethiopia. Besides, the restoration of vegetation and biodiversity, area closures play a major role in sequestering carbon that addresses the mitigation of climate change as stated in the Kyoto protocol. The objective of this study was to investigate the carbon sequestration in above ground woody biomass of area closures in dry lands of northern Ethiopia. Dry biomass was determined using single tree destructive sampling technique using forty six 100m² quadrats which were randomly selected from ten years old area closure. The average dry biomass obtained was 6.5 ton/ha. Taking about 48% of a dry biomass is carbon, the average carbon sequestered in a young area closure is about 3ton/ha. Although it is difficult to project over a longer period in to the future, the average annual carbon being sequestered was about 0.3 ton/ha. The role of area closures in climate change mitigation and the potentials of involving in carbon trading as a new forest valuation for sustainable natural resource management are further discussed.

Key words: area closure; biomass; carbon sequestration; dry land environments; northern Ethiopia