

Referência Completa do Artigo:

Guedes, Benard S., Bengt A. Olsson, Gustaf Egnell, Almeida A. Siteo, and Erik Karlton. 2018. "Plantations of Pinus and Eucalyptus Replacing Degraded Mountain Miombo Woodlands in Mozambique Significantly Increase Carbon Sequestration." *Global Ecology and Conservation* 14:e00401.

Resumo Original (Abstract):

Total ecosystem carbon (C) stocks in tree biomass (aboveground and belowground), litter layer and soil (0-50 cm depth) were quantified in mountain miombo woodland and in 34-year-old first-rotation plantations of *Pinus taeda* and *Eucalyptus grandis*. The study was performed at three sites (Penhalonga, Rotanda and Inhamacari) in the western highlands of Manica province in Mozambique, bordering Zimbabwe. One 30 m × 30 m sampling plot was established for each forest type per site. Pre-tested allometric equations were used to determine total C stocks within above ground tree biomass of each forest type and data from the literature on the relationship between aboveground and belowground biomass were used to estimate C stocks in belowground woody biomass (i.e. coarse roots). Measured soil and litter layer C data were taken from a previous study. Carbon stocks in mountain miombo woodland were used as a baseline to estimate C sequestration at the ecosystem scale, i.e. net ecosystem production (NEP) in the plantations, considering 34 years as stand age of the planted forests. Total ecosystem C stocks in miombo woodlands (~116 Mg ha⁻¹) were significantly lower than in stands of *P. taeda* (363 Mg ha⁻¹) and *E. grandis* (~407 Mg ha⁻¹). Carbon sequestration rate at ecosystem scale (NEP) was 7.24 Mg ha⁻¹ yr⁻¹ in *P. taeda* stands and 8.54 Mg ha⁻¹ yr⁻¹ in *E. grandis* stands. NEP was dominated by the increment in biomass (~80%). This was also reflected in higher ratio between biomass C and soil organic C stocks in the plantations compared with miombo forest.

The plantation species showed similar performance with respect to total C stocks and NEP. It was concluded that plantations of *P. taeda* or *E. grandis* have significant potential to increase C stocks and C sequestration rate in both soil and tree biomass on replacing degraded mountain miombo woodlands in the western highlands of Manica province.

Palavras Chave (Keywords):

Soil, Biomass, Net ecosystem production, Mozambique

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