

## **Referência Completa do Artigo:**

Guedes, Benard S., Bengt A. Olsson, Almeida A. Siteo, and Gustaf Egnell. 2018. "Net Primary Production in Plantations of *Pinus Taeda* and *Eucalyptus Cloeziana* Compared with a Mountain Miombo Woodland in Mozambique." *Global Ecology and Conservation* 15:e00414.

## **Resumo Original (Abstract):**

Planting monocultures of fast-growing non-native (exotic) species is one way to slow or reverse deforestation and forest degradation in tropical zones. This study compared the effects on total net primary production (NPP) of first-rotation monoculture (34-year-old) plantations of *Pinus taeda* and *Eucalyptus cloeziana* and adjacent mountain miombo woodland in Mozambique. Total NPP was defined as the sum of annual carbon (C) sequestration in total aboveground tree biomass, belowground coarse root biomass, fine roots ( $\leq 2\text{mm}$ ) and fine litterfall. Field measurements were conducted over one year in three  $30\text{m} \times 30\text{m}$  permanent sampling plots for each forest type and involved monitoring litterfall and fine root production using in-growth cores and stem diameter growth. Carbon increment in aboveground tree biomass and belowground coarse root biomass was determined using allometric equations, for *P. taeda*, *E. cloeziana*, and root-to-shoot ratio, for miombo woodland. Major findings were that total NPP in *P. taeda* ( $14.1\text{MgCha}^{-1}\text{yr}^{-1}$ ) and *E. cloeziana* ( $19.7\text{MgCha}^{-1}\text{yr}^{-1}$ ) stands was significantly higher than in miombo woodland stands ( $5.9\text{MgCha}^{-1}\text{yr}^{-1}$ ). These differences were largely attributable to lower basal area and presumably lower leaf biomass in miombo stands. There were several indications that the miombo stands studied had been degraded by selective cutting and other forms of use of forest resources. The difference in total NPP was also reflected in differences in patterns of C sequestration. Carbon in litterfall was the largest component of total NPP in miombo stands (41%), whereas C increment in aboveground tree biomass was the largest component of total NPP in plantation stands (44% in *P. taeda* and 51% in *E. cloeziana*). If the aim of forest management is to increase NPP and C sequestration in biomass of degraded miombo stands, our results indicate that replacement with plantations of *P. taeda* or *E. cloeziana* can be a useful management option, provided that the plantations are protected from anthropogenic disturbances, particularly fire. However, this aim needs to be balanced against other environmental aims and the socio-economic needs of local

communities, since miombo woodland provides a wide range of unique economic, social and ecological benefits.

Palavras Chave(Keywords):

Carbon sequestration Fine roots Litterfall DBH growth

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Revista e Journal:

Elsevier, Global Ecology and Conservation

Link de Acesso ao Artigo:

<https://doi.org/10.1016/j.gecco.2018.e00414>