Referência Completa do Artigo:

Lisboa, Sá Nogueira, Benard Soares Guedes, Natasha Ribeiro, and Almeida Sitoe. 2018.“Biomass Allometric Equation and Expansion Factor for a Mountain Moist Evergreen Forest in Mozambique.” Carbon Balance and Management 13(1):23.

Resumo Original (Abstract): Worldwide, forests are an important carbon sink and thus are key to mitigate the effects of climate change. Mountain moist evergreen forests in Mozambique are threatened by agricultural expansion, uncontrolled logging, and firewood collection, thus compromising their role in carbon sequestration. There is lack of local tools for above-ground biomass (AGB) estimation of mountain moist evergreen forest, hence carbon emissions from deforestation and forest degradation are not adequately known. This study aimed to develop biomass allometric equations (BAE) and biomass expansion factor (BEF) for the estimation of total above-ground carbon stock in mountain moist evergreen forest. The destructive method was used, whereby 39 trees were felled and measured for diameter at breast height (DBH), total height and the commercial height. We determined the wood basic density, the total dry weight and merchantable timber volume by Smalian’s formula. Six biomass allometric models were fitted using non-linear least square regression. The BEF was determined based on the relationship between bole stem dry weight and total dry weight of the tree. To estimate the mean AGB of the forest, a forest inventory was conducted using 27 temporary square plots. The applicability of Marzoli’s volume equation was compared with Smalian’s volume equation in order to check whether Marzoli’s volume from national forest inventory can be used to predict AGB using BEF. The best model was the power model with only DBH as predictor variable, which provided an estimated mean AGB of 291 ± 141 Mg ha−1 (mean ± 95% confidence level).

The mean wood basic density of sampled trees was 0.715 ± 0.182 g cm−3. The average BEF was of 2.05 ± 0.15 and the estimated mean AGB of 387 ± 126 Mg ha−1. The BAE from miombo woodland within the vicinity of the study area underestimates the AGB for all sampled trees.

Chave et al.’s pantropical equation of moist forest did not fit to the Moribane Forest Reserve, while Brown’s equation of

moist forest had a good fit to the Moribane Forest Reserve, having generated 1.2% of bias, very close to that generated by the selected model of this study. BEF showed to be reliable when combined with stand mean volume from Marzoli's National Forestry Inventory equation. The BAE and the BEF function developed in this study can be used to estimate the AGB of the mountain moist evergreen forests at Moribane Forest Reserve in Mozambique. However, the use of the biomass allometric model should be preferable when DBH information is available.

Palavras Chave (Keywords):

Above-ground tree biomass, Carbon stock, Pan-tropical equation, Biomass expansion factor

Quadro (s) do Departamento de Engenharia Florestal envolvido (s):

- **Sá Nogueira Lisboa (Assistente Universitário, MSc)**
- **Natasha Sofia Ribeiro (Professora Associada, PhD)**
- **Benard Soares Guedes (Investigador Auxiliar, PhD)**
- **Almeida Alberto Sitoe (Professor Catedrático, PhD)**

Revista e Journal:

BMC, Carbon Balance and Management

Link de Acesso ao Artigo:

https://doi.org/10.1186/s13021-018-0111-7