

# 3<sup>rd</sup> International Conference on Ecology, Ecosystem and Conservation Biology

## 3<sup>rd</sup> International Conference on & Microbial Ecology & Eco Systems

March 18-19, 2019 | Chicago, USA

POSTERS PRESENTATIONS | DAY 2

JOURNAL OF ECOSYSTEM & ECOGRAPHY 2019, VOLUME 9 | DOI: 10.4172/2157-7625-C1-045

### Assessing carbon pools of three indigenous agroforestry systems of south eastern rift valley landscapes, Ethiopia

Hafta Mebrahten Tesfay<sup>1</sup>, Mesele Negash<sup>2</sup>, and Herbert Hager<sup>1</sup>

<sup>1</sup>Boku University of Natural Resources and Life Sciences, Austria

<sup>2</sup>Hawassa University Wondo-genet College of Forestry and Natural Resources, Ethiopia

I ncreasing the size of the global terrestrial sink is one strategy for mitigation of CO<sub>2</sub> concentration in the atmosphere. The most significant increases in C storage can be achieved by moving from lower biomass land-use systems to tree-based systems like agroforestry systems. Reports indicated that 1.1–2.2x10<sup>9</sup> t C could be removed from the atmosphere over the next 50 years if agroforestry systems are implemented on a global scale. However, estimation of carbon stocks in indigenous agroforestry systems of South-eastern Rift-valley landscapes, Ethiopia remains unexplored. Therefore, the study was aimed to investigate above

ground and below ground biomass, below ground and above ground biomass carbon, soil organic carbon and total carbon stock of three indigenous agroforestry systems namely (Enset based, Enset-coffee based and Coffee-Fruit tree-Enset based). The study was conducted in three selected sites of Dilla zuria district of Gedeo zone. For each agroforestry system, 20 farms (total of 60) representative of each agroforestry system was randomly selected and inventoried. Different allometric equations were used for estimation and data was analyzed by IBM SPSS version 22 (SPSS Inc. 2010). The mean average agroforestry C stock (biomass C, litter plus SOC up to 40cm depth) was the highest for the Coffee–Fruit tree-Enset based agroforestry system (237 t C ha<sup>-1</sup>) and the lowest for the Enset (187 C ha<sup>-1</sup>) system. Biomass (above and belowground) C stocks were also highest for the Coffee–Fruit tree-Enset based agroforestry (140.5±54 t C

ha<sup>-1</sup>) and followed by Enset based agroforestry system (40.1±9.6 t C ha<sup>-1</sup>) and Enset (49 ±44). The two-tailed t-test at the significance level of α=0.05 showed, there are significant differences among the agroforestry systems. Indigenous agroforestry systems will have a great contribution to mitigating climate change through carbon sequestration.

#### Biography

Hafta Mebrahten Tesfay got his bachelor's degree in Natural Resource Management (2006) from Hawassa University, Ethiopia. After graduation he served as soil and water conservation expert and later as head of land use administration and environmental protection of a district in Ethiopia. Now he is a Ph.D. student at BOKU University of Natural Resources and Life Sciences, Vienna, Austria. He has three publications and they are published as monographs, book of abstracts and poster presentations.

Hafta2003@gmail.com