

Exploring Tree Growth Variables Influencing Carbon Sequestration in the Face of Climate Change

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Abstract : One of the major problems being faced by human society is that the global temperature is believed to be rising due to human activity that releases carbon IV oxide (CO₂) to the atmosphere. Carbon IV oxide is the most important greenhouse gas influencing global warming and possible climate change. With climate change becoming alarming, reducing CO₂ in our atmosphere has become a primary goal of international efforts. Forest lands are major sink and could absorb large quantities of carbon if the trees are judiciously managed. The study aims at estimating the carbon sequestration capacity of *Pinus caribaea* (pine) and *Tectona grandis* (Teak) under the prevailing environmental conditions and exploring tree growth variables that influence the carbon sequestration capacity in Omo Forest Reserve, Ogun State, Nigeria. Improving forest management by manipulating growth characteristics that influence carbon sequestration could be an adaptive strategy of forestry to climate change. Random sampling was used to select Temporary Sample Plots (TSPs) in the study area from where complete enumeration of growth variables was carried out within the plots. The data collected were subjected to descriptive and correlational analyses. The results showed that average carbon stored by Pine and Teak are 994.4 ± 188.3 Kg and 1350.7 ± 180.6 Kg respectively. The difference in carbon stored in the species is significant enough to consider choice of species relevant in climate change adaptation strategy. Tree growth variables influence the capacity of the tree to sequester carbon. Height, diameter, volume, wood density and age are positively correlated to carbon sequestration. These tree growth variables could be manipulated by the forest manager as an adaptive strategy for climate change while plantations of high wood density species could be relevant for management strategy to increase carbon storage.

Keywords : adaptation, carbon sequestration, climate change, growth variables, wood density

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