Estimating the Carbon Sequestration Potential of Trees within Rivers State University Main Campus

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SUMMARY

The carbon sequestration potential of all trees within River's state university (Main Campus) was determined, using a non-destructive method, and allometric equation was used in determining the carbon sequestration of each tree species. A total of 1,865 trees were measured. The trees were categorized as Recently Planted, Old, Fallen, and Dead without Leaves (DWL). 24.2 % of the Trees were recently planted, 5.2 % of the trees are Fallen, 1.0 % were dead without leaves, this could be due to natural occurrence, and about 70% of previously planted (Old) plants still exited. The total carbon sequestered by the trees within the study area is 13603.43Kg, approximately 13.60 Metric Tons. The Previously planted (Old) trees sequestered more carbon approximately 13,034.92kg, which constitute about 96% of the entire tree population. A total of 452 trees were recently planted, which constitutes about 3.5% of the total tree population, sequestering 478.973kg of carbon. Individually, the top 3 most carbon was sequestered by Teak (Tectona grandis) tree, followed by Kashmir tree (Gmelina arborea) and Gum tree (Eucalyptus spp.), with CSP rate of 73.78kg, 52.77kg, and 43.19kg respectively. The coefficient of residual, R-squared showed that 95% of the dependent variable was explained or accounted for by the explanatory variables and the explanatory variable were statistically significant. Spatial distribution analysis and Hotspot analysis was carried out to determine the spread of the top 3, most Carbon sequestering trees, and the distribution of CO_2 within the study area. From the analysis carried out, the school could be considered as a carbon trading site, seeing the number of available trees; old and recently planted within the campus. Although the volume of carbon sequestered is low, this could be increased by good Agricultural management practices, effective policy, and regulatory framework, geared towards intentional tree planting of high carbon sequestering tree species, and minimizing afforestation.

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