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## Carbon Storage in Agroecosystems: A Case Study of the Cocoa Based Agroforestry in Ogbese Forest Reserve, Ekiti State, Nigeria

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### Author(s)

David Oke, Ayodeji Olatiilu

### ABSTRACT

Large areas of the indigenous tropical forests in the southwestern part of Nigeria are being converted into agricultural lands and this has been reported to have serious implications for biodiversity and the environment. Cocoa based agroforestry is one of the common agricultural practices in this region and comparative information on the carbon storage capacity of the cocoa agroforests is generally lacking. In this study the above-ground carbon storage and partitioning in a protected primary forest were evaluated and compared with those of the two categories of cocoa agroforests (sparse and dense) identified in the area. Above-ground biomass accumulation and carbon stock varied significantly with land use type, with the primary rainforest having the highest values and sparse cocoa agroforests having the lowest. A reduction in above-ground carbon stock of 89.82% and 71.20% was observed 10 years after conversion of tropical rainforest to sparse and dense cocoa agroforests respectively.

### KEYWORDS

Carbon Sequestration, Cocoa, Agroforestry, Forest Conversion, Global Climate Change

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