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"Reconcile land system changes
with planetary health"

Assessment of the plant resource potential of different land uses within the restored forest landscapes In central Togo

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Abstract

Plant diversity plays a central role in FLR initiatives and is an essential component in ensuring the long-term resilience of restored forest landscapes. Despite restoration initiatives underway for some time, existing studies less focused on the effects of these restorations on the biodiversity and carbon stock of restored sites. Assessing the species composition can be an essential tool for planning implementation and evaluating ongoing restoration efforts. The proposed study aims to explore the potential of plant floristic diversity, structural characteristics of woody stands, as well as the biomass and carbon sequestration potential. The results reveal a wide range of floristic richness according to land-use type, with dense dry forests/ gallery forest in the lead, hosting 216 species, followed by open forests/wooded savannahs (190 species) and mosaics crop/fallow land (173 species). In contrast, plantations areas show minimal diversity (67 species) due to their structural homogeneity. Phanerophytes largely dominate (89.01 %) in all land-use types reflecting a biodiversity adapted to local variations. The results highlighted the presence of 16 IUCN-threatened species, including several that are vulnerable or endangered, especially in open ecosystems (tree /shrub savannahs), which reflects the importance of these land uses for conservation. In terms of forest characteristics, tree /shrub savannahs have the highest tree density (252 $^{N}/_{ha}$), but dense forests and mosaics crop/fallow stand out for their larger diameters and greater carbon storage capacity (11.09 $^{t}/_{ha}$ for dense dry forest/gallery forest). The average total biomass is 49.96 $^{t}/_{ha}$, with dense dry vegetation types being the main contributors, underlining their key role in carbon sequestration. These results provide valuable information on the plant resource potential and mitigation capacity of different land uses in a restoration context. It provides guidance for decision-makers in prioritising preservation aspects in order to strengthen the resilience of land uses subject to vulnerability.

Keywords: Biomass, carbon sequestration, floristic diversity, structural characteristics, threatened species, woody stands

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