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Carbon stocks in tropical high-land ecosystems in the Santuario de Fauna y Flora de Iguaque, Colombia

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The high-land ecosystems are a great carbon (C) sinks, mainly in soils. The objective of this study was to estimate the C storage in the most dominant Land Uses (LU) (dense grasslands in firm lands with no trees -G, open shrub lands -OS, dense shrub lands -DS, high dense forest in firm land -F) of the Santuario de Fauna y Flora de Iguaque (SFFI), Boyacá, Colombia. A temporal sampling plot of 10*25 m^2 in OS, DS and F was established and diameter at the breast height (dbh) and total height were measured in all trees with dbh>10 cm and the total and stipitate height of Espeletia spp. It was estimated the above ground and below ground biomass using allometric models. The Soil Organic Carbon (SOC) was estimated at a depth of 0-30 cm. The greatest C contents were found in F, being higher than the rest of LU (59.0 t/ha). The shrub lands with different tree density presented similarities in the C in total biomass (28.7 vs. 25.3 for dense and open, respectively). The G, dominated by Espeletia spp., presented the lowest C (5.3 t/ha). The C stock was similar between LU (83-139 t/ha), mainly caused by a high spatial variability. The results show a high C stock, mainly in SOC, in these ecosystems, that indicates the relevance of conserving these ecosystems for removing this greenhouse gas from the atmosphere.

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