

ABOVEGROUND BIOMASS AND CARBON STOCK IN CERRADO GALLERY FORESTS (BRAZIL)

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SUMMARY

The Cerrado vegetation in South America is a hot spot of biodiversity within the Brazilian savanna, forming a mosaic of vegetation types varying from grasslands to woodlands. Despite its ecological relevance, 3.6 million hectares were already converted into agricultural landscape, and that threats might intensify in the next years, due to food production requirement. Brazilian environmental law for the conservation of riparian zones (RZs) along the rivers contributes to the maintenance of Gallery Forests, but in the last few years a negative impact with a reduction of vegetation buffer along rivers from the previous minimal width of 30 m to 15 m occurred. Cerrado riparian zones are already isolated and fragmented by croplands and farming and will have negative pressure in the future, due to the expansion of agroindustry activities. Cerrado's gallery forests are characterized by high plant diversity, including 1/3 of all plants biodiversity of the Cerrado biome. 5 % - 10 % of the Cerrado ecoregion are covered by gallery forest. Gallery forests are generally rich in woody plant species and are postulated to be refuges for tropical forest species. Loss of forest and forest degradation lead to a release of carbon dioxide. Biomass estimations help to level this greenhouse gas release. However, few studies have quantified biomass in the Cerrado and in gallery forests within this ecoregion. – The aim of this study is to give a biomass estimate for gallery forests in the Rio das Mortes catchment. The aboveground alive biomass of trees with a diameter ≥ 5 cm was estimated.

As part of the upper catchment of Rio das Mortes (Mato Grosso) the analysed Gallery forests are located at the farms Rio Engano RE (15°22'S, 54°51'W), Santa Luzia SL (15°44'S, 55°21'W) and Rancho do Sol close to Santa Luzia (15°48'S, 55°20'W). A total number of 14 plots (20 x 20 m) were analysed. To use allometric models for biomass calculation DBH, tree height, wood specific gravity and tree species identity were included in the forest inventory. AGB was estimated with the allometric model by Chave et al. (2005). All three gallery forests were heterogeneous regarding regeneration, presence of lianas, amount of dead wood and disturbances. Average height and DBH was variable and there were significant differences between the three forest sites. Forest structure (DBH-classes) indicates that all three forest sites are in an equilibrium of growth and mortality. Basal area values can be compared with tropical rainforest sites at the lower end. The majority of the families and genera found in the gallery forests also have typical Cerrado species and typical Amazon and Atlantic