Impact on Soil Organic Carbon Stocks and Soil Characteristics in Tropical Dry Deciduous Forests of Central Indian Landscape following the invasion of Lantana Camara L.

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June 24, 2024

Abstract

Invasive species are considered as the chief global change drivers having the potential to change the functioning of ecosystem and biodiversity. Although, soil organic carbon dynamics is affected by plant invasion, very few studies have focused on the impact of an invasive shrub, Lantana camara L. on the soil organic carbon storage mainly in India, in spite of the extensive invasion of the shrub in the country. The main objective of the present study is to consider the impact of Lantana camara L on soil organic carbon stocks in tropical dry deciduous forests of Madhya Pradesh, Central India. It was found that the soil organic carbon was significantly influenced by the invasion of Lantana camara predominantly at the depth of 0-10 cm depth and its values were 10.4\% higher as compared to that of uninvaded site. On an average, the percentage of soil organic carbon at the soil depths of 0–10, 10.1–30, and 30.1–50 cm were reported to be 29.8, 37.3, and 32.9 \% in Lantana invaded sites and 27.0, 38.4 and 34.6 \% in uninvaded sites, respectively. Also, higher soil moisture content, higher soil pH and lower soil bulk density were reported in Lantana invaded sites at all the depths as compared to uninvaded sites. Current study reports the alteration of soil organic carbon stocks by Lantana invasion which can be helpful in understanding the impact of invasive plant species on soil organic carbon stocks in tropical forests and to forecast the changes in ecosystem functioning.

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