

Reversing Soil Degradation to Achieve Healthy Soils for a Healthy Guyana

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The degradation of soil in tropical countries is usually exacerbated by the high erodibility of geologically old and weathered soils, unsustainable soil management, loss of forest vegetation cover, unsustainable mining activities, and intensive rainfall. This loss of superficial material depletes soil nutrient and carbon content, decreases living organism community, and lowers water tables, resulting in a 'lose-lose' situation for environmental integrity and agricultural productivity (Wantzen & Mol, 2013). The authors indicated that globally, unsustainable land practices affect an estimated 1094 million hectares, resulting in economic losses through deterioration or complete loss of agricultural surfaces amounting to billions of dollars. Therefore, sustainable soil management (SSM) practices, coupled with effective actions to reverse soil degradation, are paramount in the quest to restore degraded land and soil. This is in keeping with Target 15.3 of the Sustainable Development Goals (SDGs): *By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.*

The main drivers of soil degradation are unsustainable agricultural, logging, and mining practices, which are a consequence of inequitable and insecure land tenure, insufficient research, and lack of extension services (FAO & ITPS, 2015). These threats to soil health are also prevalent in Guyana, hence the importance of championing measures to reverse soil degradation considering extreme climatic events (Figure 1). As of recent, the climate change phenomenon has resulted in more intense and concentrated rainfall events coupled with higher evaporation, which alter the pace and intensity of erosion, flooding, and drought. These soil threats are further compounded by the increased risks to biodiversity, crop production, organic carbon, and water quality and quantity (FAO & ITPS, 2015; IPCC, 2014).



Figure 1. Transitioning from degraded soil to healthy soil.

Food security is high on Guyana’s agenda, and soil serves as the basis of all terrestrial ecosystems, supporting food and water security while playing a vital role in reducing the impacts of climate change. Despite these vital ecosystem goods and services that healthy soil provides to plants, animals, and humans, its status and biodiversity are usually overlooked. This sort of oversight can often lead to soil degradation, habitat loss, water shortages, and siltation, thereby reducing biodiversity and ecosystem services and having dire economic consequences. Immediate actions are therefore needed to alleviate these direct threats to the pillars of sustainable soil management. Based on recent estimates, 39 percent of Guyana’s land area has soils unsuitable for agricultural purposes (GLSC, 2013), further exemplifying the importance of protecting healthy soils for a healthy Guyana.

Guyana has made some notable strides in reversing soil degradation through the promotion of sustainable soil management efforts:

- Development of the *Land Degradation Neutrality Target Setting Programme* (LDN TSP) to garner results for the protraction of healthy soil and enhance food security as well as poverty reduction (Guyana Lands and Surveys Commission, 2017);
- Implementation of the *National Strategy for Agriculture in Guyana (2013-2020)*, which promotes safeguards against drought and land degradation while ensuring food security for all of Guyana (GLSC, 2015); and
- Implementation of the *Caribbean Small Island Developing States (SIDS) Multicountry Soil Management Initiative for Integrated Landscape Restoration and Sustainable Food Systems: Phase I (CSIDS-SOILCARE Phase I)* to strengthen Caribbean SIDS with the necessary tools for adopting policies, measures and reforming legal and institutional frameworks to achieve LDN and climate resilience. Guyana and seven other Caribbean countries (Antigua and Barbuda, Barbados, Belize, Grenada, Haiti, Jamaica and Saint Lucia) are benefitting from this project, which has a strong component related to updating and strengthening national and regional soils information, technical capacity and coordination as a basis for improved decision making on SSM (PISLM, 2020).

Land cover, land productivity, and soil organic carbon content are the primary indicators of interest when discussing matters related to LDN. Although these indicators relate to the broader discussion of sustainable land management (SLM), soil organic carbon content is more germane to the matter of SSM in celebration of World Soil Day 2022. Soil organic carbon is a vital component of soil, given its capacity to promote plant growth, maintain soil fertility through nutrient cycling, and store and filter freshwater. Soil organic carbon provides critical insights into the quality of soil, hence its importance at the local, regional, and international scale in relation to the carbon cycle. The soil organic carbon pool plays a fundamental role in the estimation of carbon fluxes since it serves as both a source and sink of carbon.

However, anthropogenic activities in the form of land use change and management practices threaten soil organic carbon stocks, thereby affecting soil productivity (UNCCD, 2016). We need to act now to protect our healthy soils which underpin functioning ecosystems and support productive land-based natural capital.

In simple terms, health soils serve as a foundation for life above ground. We need to renew our calls and continue to champion the importance of addressing the loss of soil health through greater land protection as a safe haven for species and ecological processes and SSM to protect the productivity of soil ecosystem, restore degraded lands, and minimise future degradation. In commemoration of World Soil Day 2022, Guyana joins the rest of the world in championing the need for sustainable soil management to maintain healthy soils for a healthy Guyana in keeping with the theme *Soils: Where Food Begins*. The need exists for heightened awareness of the multifaceted importance of soil and being cognizant that healthy soil equals a healthy Guyana.

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