DOI: 10.46991/JISEES.2025.SI1.004

Enhancing Carbon Sequestration Through Sustainable Land Management for Climate Resilience and SDG Achievement

Deepak Kumar[1], Varsha Pandey[1*], Bhavana Tomar[2]

[1] School of Agriculture, Galgotias University, Greater Noida, Uttar Pradesh-203201

[2] School of Agricultural Sciences, GD Goenka University, Gurugram, Haryana-122103

ABSTRACT

Climate change poses a critical global challenge, driven by human-induced emissions of greenhouse gases like carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These gases contribute to the greenhouse effect, leading to long-term alterations in Earth's atmospheric conditions, including temperature and precipitation patterns. Addressing this challenge requires innovative approaches, among which carbon sequestration emerges as a pivotal strategy. Carbon sequestration involves the capture and storage of atmospheric carbon, crucial for mitigating greenhouse gas emissions. Natural ecosystems such as forests, wetlands, and oceans, alongside human-engineered methods like afforestation, reforestation, and advanced carbon capture technologies, play integral roles in this process. By enhancing environmental resilience, carbon sequestration not only mitigates climate change impacts but also promotes sustainable development goals (SDGs). Effective land-use practices integrating carbon sequestration not only enhance ecosystem resilience but also foster economic growth, food security and societal well-being. Emphasizing sustainable land management practices and supporting policies can drive these benefits further. International agreements such as the Paris Agreement provide essential frameworks for global collaboration on carbon sequestration efforts. There is an urgent need for coordinated efforts among governments, international organizations and stakeholders to implement robust regulations, incentives and financial mechanisms that support carbon sequestration initiatives. By doing so, we can address climate change effectively while advancing towards a more sustainable and resilient future.

Keywords: carbon sequestration, climate change, environmental resilience, sustainable development, land management

References:

1. THE 17 GOALS | Sustainable Development. Available online: https://sdgs.un.org/goals (accessed on 3 November 2024).
2. Singh, A.; Singh, A.K.; Rawat, S.; Pal, N.; Rajput, V.D.; Minkina, T.; Sharma, R.; Singh, N.P.; Tripathi, J.N. Satellite-Based Quantification of Methane Emissions from Wetlands and Rice Paddies Ecosystems in North and Northeast India. *Hydrobiology* **2022**, *1*, 317–330. DOI:10.3390/hydrobiology1030023

[*]Corresponding Author:

Varsha Pandey, School of Agriculture, Galgotias University, Greater Noida.
Email: varshapandey.p93@gmail.com