

Assessing Carbon Stock and Sequestration of Reforestation Species on Old Mining Sites in Morocco Using the DNDC Model

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Abstract : Mining activities have left a legacy of degraded landscapes, prompting urgent efforts for ecological restoration. Reforestation holds promise as a potent tool to rehabilitate these old mining sites, with the potential to sequester carbon and contribute to climate change mitigation. This study focuses on evaluating the carbon stock and sequestration potential of reforestation species in the context of Morocco's mining areas, employing the DeNitrification-DeComposition (DNDC) model. The research is grounded in recognizing the need to connect theoretical models with practical implementation, ensuring that reforestation efforts are informed by accurate and context-specific data. Field data collection encompasses growth patterns, biomass accumulation, and carbon sequestration rates, establishing an empirical foundation for the study's analyses. By integrating the collected data with the DNDC model, the study aims to provide a comprehensive understanding of carbon dynamics within reforested ecosystems on old mining sites. The major findings reveal varying sequestration rates among different reforestation species, indicating the potential for species-specific optimization of reforestation strategies to enhance carbon capture. This research's significance lies in its potential to contribute to sustainable land management practices and climate change mitigation strategies. By quantifying the carbon stock and sequestration potential of reforestation species, the study serves as a valuable resource for policymakers, land managers, and practitioners involved in ecological restoration and carbon management. Ultimately, the study aligns with global objectives to rejuvenate degraded landscapes while addressing pressing climate challenges.

Keywords : carbon stock, carbon sequestration, DNDC model, ecological restoration, mining sites, Morocco, reforestation, sustainable land management.

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