REGENERATIVE AGRICULTURE PRACTICES ADOPTED BY CORPORATE TEA ESTATES IN NUWARA ELIYA DISTRICT: A CASE STUDY OF MATURATA AND UDAPUSSELLAWA PLANTATIONS

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2026

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ABSTRACT

This study examines the adoption of regenerative agriculture practices and their relationship to soil conservation and yield sustainability across corporate tea estates in the Nuwara Eliya District, Sri Lanka. Regenerative agriculture aims to restore soil health, enhance biodiversity, and improve climate resilience within plantation ecosystems. Data were collected from ten major estates Court Lodge, Blairlomond, Waldemar, Delmar, Park, Matura, Alma, Bramley, Mahauva, and Highforest using structured questionnaires, field assessments, and index value measurements. Data were collected, scored and analyzed to calculate a Regenerative Agriculture Adoption Index for each estate. The findings revealed variation in adoption levels, with Udapussellawa plantations showing a higher average Adoption (40.1%) compared to estates under the Maturata plantation group (31.9%). Estates with strong adoption of Sloping Agricultural Land Technology systems, terracing, and organic matter management exhibited higher Soil Quality Index values, indicating improved soil structure, nutrient content, and biological activity. Descriptive and correlation analyses confirmed a positive relationship between soil conservation measures and yield sustainability ($r = 0.215$), while regional comparisons showed the Udapussellawa region exhibiting greater regenerative adoption than Maturata Plantation estates. Moreover, estates such as Blairlomond and Court Lodge displayed the highest total area contributions to carbon sequestration and biodiversity enhancement, underscoring their ecological stewardship. The findings emphasize that regenerative agriculture significantly contributes to soil recovery, carbon storage, and sustainable tea productivity, though limited adoption of composting and Agri-tourism practices constrains full-scale transformation. Strengthening institutional support, capacity building, and financial incentives is recommended to expand regenerative adoption across Sri Lanka's tea sector.

Keywords: Biodiversity, Carbon Sequestration, Regenerative Agriculture, Soil Health, Sustainability