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## **ADVANCEMENTS AND IMPACTS OF COMBINE HARVESTERS IN PADDY CULTIVATION IN NORTHERN PROVINCE OF SRI LANKA: A COMPREHENSIVE REVIEW**

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**Abstract:** The paper explores the transformative role of combine harvesters in the paddy cultivation of Northern Province of Sri Lanka. Paddy growing is one of the backbones of Northern Sri Lanka's agrarian economy, where rice cultivation is the lifeblood of a vast majority. It is no secret that, the last few decades have seen a transformation in agricultural practices, with the introduction of combine harvesters signifying a move toward mechanisation. This review critically explores the socio-economic, technological, environmental, and social implications of these changes through the indigenous landscape of Northern province, a region attempting to reconstruct its agrarian economy after civil war. Adoption of combine harvesters, which had previously taken place under international aid and development projects, provided major solutions to key problems such as labour shortages. Small-scale and track-type harvesters, along with locally modified imported machines, have proven instrumental in enhancing productivity and efficiency. However, the high costs of machinery, environmental concerns like soil compaction and emissions, and social challenges, including job displacement and shifting gender roles, have emerged as significant issues. The economic benefits of mechanization extend beyond individual farmers, fostering food security, income generation, and new employment opportunities in machinery operation and maintenance. This review highlights the need for sustainable mechanization, enhanced support infrastructure, and community-based cooperative models to address challenges. By balancing mechanization's benefits and potential drawbacks, Northern province can build a more resilient and inclusive agricultural sector, fostering long-term socio-economic recovery and environmental sustainability.

**Keywords:** Combine Harvester, Paddy Cultivation, Northern Province.