

A Review on Portable Electric Power Tiller Machine

Gavane Gayatri Laxman¹, Phadatare Raviraj Ramdas², Shingewad Nitesh Avdhut³,
Raut Tanuja Pradeep⁴, Dadasaheb Dagadu Rupanwar⁵

Students, Department of Mechanical Engineering¹⁻⁴

Assistant Professor, Department of Mechanical Engineering⁵

Vidya Pratishthans Kamalnayan Bajaj Institute of Engineering & Technology Baramati, Maharashtra

Abstract: *The Portable Electric Power Tiller Machine is designed to assist small-scale farmers with soil preparation, providing an eco-friendly and efficient alternative to conventional fuel-powered tillers. This research explores the design, development, and performance evaluation of the machine, focusing on its lightweight construction, electric motor efficiency, and ease of operation. The machine is powered by a high-torque electric motor, optimized through gear ratio adjustments to enhance power transmission and reduce energy consumption. The tiller's blade configuration is carefully designed to maximize soil penetration and minimize resistance, improving overall tilling efficiency. Motor selection and gear optimization addressed. Key challenges such as torque limitations and battery runtime. Performance tests demonstrate that the machine achieves consistent tilling depth and coverage, with reduced operational noise and maintenance requirements. Future improvements include the integration of solar charging and automation features to enhance efficiency and sustainability further. This research highlights the potential of electric-powered agricultural machinery in promoting sustainable farming practices.*

Keywords: Eco-friendly, Lightweight Construction Electric Tiller machine, motor, portable

