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## **Portable Electric Tiller Machine**

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Abstract: The increasing demand for food production coupled with rising concerns about environmental sustainability necessitates the adoption of eco-friendly and efficient agricultural practices. Conventional fuel-based power tillers, while effective, contribute significantly to air and noise pollution, and incur high operational costs. This research focuses on the design, development, and performance evaluation of an electric power tiller machine as a sustainable alternative for small-scale farming. The primary objective is to create a tiller that minimizes environmental impact while maximizing efficiency and cost-effectiveness. The methodology involves conceptual design, CAD modeling, material selection, fabrication, and rigorous performance testing. Key performance indicators, such as soil penetration depth, tilling width, speed, and energy consumption, are analyzed and compared with conventional tillers. The results demonstrate the potential of the electric power tiller to offer a cleaner, quieter, and more economical solution for small farmers, contributing to sustainable agriculture. The study also identifies areas for future improvement, including solar integration and automation features

Keywords: CAD modeling

