ABSTRACT

DEVELOPMENT OF AN AUTOMATED POLYBAG FILLING MACHINE FOR SMALL-SCALE AGRICULTURE

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This study presents the development of an automated polybag filling machine tailored for small-scale agriculture. The machine is designed to reduce manual labour, improve efficiency, and ensure consistent media filling. It incorporates an Arduino-based control system, screw conveyor, ultrasonic sensor, and AC motor. The design process involved modelling with Autodesk Inventor, prototype assembly, and system testing. Results show a significant reduction in filling time and labour cost, with improved accuracy and uniformity compared to manual methods. The machine successfully supports higher productivity while reducing physical strain on farmers. Overall, this project offers a practical and scalable solution to enhance nursery operations and promote more sustainable agricultural practices.

Keywords: Sand polybag filling machine, Small-scale agriculture, Automation in agriculture, Arduino, Ultrasonic sensor.