MECHANIZATION OF FILLING OF SAW DUST GROWING MEDIA INTO POLY BAGS IN OYSTER MUSHROOM CULTIVATION

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Small and medium scale mushroom enterprise is a good opportunity for people having limited area of land and interested in an additional income. The nutritional value and medicinal properties create a high demand for mushroom in both local and international markets. In the process of oyster mushroom growing media preparation, the mixed ingredients need to be filled into poly bags and there is no any mechanical means in Sri Lanka at present except manual filling. It has become a major problem in mushroom enterprise as the manual filling is laborious, expensive and time consuming. This study was conducted to introduce an efficient and affordable mechanical method as an alternative for the problems associated with manual filling. Main components of the fabricated machine are hopper, feeding agitator, adjustable table top and vibrating hammer, which is powered by an electric motor. The integrated filling and hammering action of this machine can be considered as the most prominent feature. The length, width and height of the machine are 130 cm, 60 cm and 220 cm, respectively. The estimated total production cost of the machine was about 50 000 LKR. The performance of the machine was evaluated compared to manual filling method, using the same operator. According to the evaluation results, actual filling capacities of the machine and manual methods were 60 bags h^{-1} and 33 bags h^{-1}, respectively, while theoretical filling capacities were 86 bags h^{-1} and 43 bags h^{-1}, respectively. Filling efficiencies of both methods were 69.8% and 76.7%, respectively. Therefore, the mushroom growing media filling machine could be effectively utilized with higher filling capacity than the manual filling method, in order to increase the mushroom production by reducing production cost.

Keywords: Filling capacity, Mechanical filling, Mushroom cultivation