

MECHANIZATION OF GROWING MEDIA PREPARATION FOR SMALL AND MEDIUM SCALE MUSHROOM ENTERPRISES

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Edible mushroom cultivation is a profitable cottage industry, in which oyster mushroom occupies a prominent place in Sri Lanka. The substrate and labour are critical factors that determine the profitability of the mushroom cultivation. Although, saw dust is the most commonly used substrate, manual preparation of saw dust as the growing media is very labour and time consuming. As the first step of this preparation, saw dust is sieved and then it is mixed with other essential ingredients. Since this process is difficult and labour consuming, most of the mushroom enterprises in Sri Lanka are limited to small scale operators. Therefore, this study was aimed at appropriate mechanization of saw dust preparation for small scale mushroom cultivation in Sri Lanka. Newly designed machine comprises two separate units as saw dust sieving unit and mixing unit. Sieve with a No-8 woven wire mesh was mounted on an iron frame with the support of caster wheels and powered by an electric motor. This is connected to a crankshaft in order to convert the angular motion into linear motion. The mixing tank was designed to mix 20 kg of saw dust at once and mixing plates were fitted to increase the mixing efficiency. Both units performed satisfactorily when shafts rotated at 80 rpm. The performance of both units were evaluated, compared to manual methods using mango saw dust. The capacity of the mechanical sieve was recorded as 200 kg h⁻¹ while manually sieving was 160 kg h⁻¹. The capacity of the mechanical mixer was 300 kg h⁻¹ while it was 55 kg h⁻¹ in manual mixing. Results clearly showed that, the mechanical method saves time considerably compared to the manual method.

Keywords: Growing media preparation, Mechanical mixing, Mechanical sieving