

Cultivation of Oyster Mushroom (*Pleurotus Ostreatus*) Using Biowastes

R. Ramseen^{1*}, J. Nimalan²

¹*Department of Bio science, Faculty of Applied Science, University of Vavuniya*
**2017asb29@vau.jfn.ac.lk*

Sawdust is one of the main ingredients used as a carbon source in mushroom cultivation in Sri Lanka. Nowadays, sawdust is getting scarce because of its limited availability. Farmers are dumping agricultural waste in the environment without proper usage, which causes environmental pollution and health hazards. Mushroom cultivation has the potential to significantly reduce harmful environmental effects by transforming biowastes into valuable food. The study was focused on evaluating the effect of different biowastes on the cultivation of oyster mushrooms as an alternative for sawdust. Cultivation of mushrooms was conducted in the mushroom hut under growth conditions of a temperature of 20-30 °C and a humidity of 80-90%. The experiment was carried out in a complete randomized design (CRD) with 10 treatments, *viz.*, sawdust and rice bran (10:1) (T1-standard), coir dust and rice bran (10:1) (T2) sawdust, coir dust, and rice bran (5:5:1) (T3), sawdust, coir dust, and rice bran (6:3:2) (T4), banana pseudo-stem and rice brane (10:1) (T5) sawdust, banana pseudo-stem, and rice bran (5:5:1) (T6), sawdust, banana pseudo-stem, and rice bran (6:3:2) (T7), water hyacinth and rice brane (10:1) (T8) sawdust, water hyacinth, and rice bran (5:5:1) (T9), sawdust, water hyacinth, and rice bran (6:3:2) (T10), and each treatment had five replicates. The treatments contained different combinations of biowastes on the dry-weight basis. The means were compared for mycelium invasion, pin head formation, fruiting body formation, stipe length, pileus diameter, fresh weight, and biological efficiency using Duncan's Multiple Range Test (DMRT) using SPSS 26. The study showed that the time required for the growth phase and cost were less, and biological efficiency and benefits were statistically high in T4 in the substrate combination of sawdust, coir dust, and rice brane in a 6:3:2 ratio compared to all other treatments. Even though the treatment containing sawdust, banana pseudo-stem, and rice brane in 6:3:2 (T7) showed similar results, it has taken two more weeks for mycelium invasion compared to T4. Further, the results showed that coir dust and banana pseudo-stem can be mixed with sawdust instead of the standard practice followed by farmers. The study concludes that there is a potential for using biowastes such as coir dust and banana pseudo-stem in oyster mushroom cultivation, which may be an alternative to sawdust with better utilization of biowastes and a low cost of mushroom production.

Keywords: Biological Efficiency, Biowastes, Complete Randomized Design, Duncan's Multiple Range Test, Mushroom Cultivation