

Assessment of growth and yield traits of novel mushroom strains (*Pleurotus* spp.) for commercial cultivation

T. H. S. Sujeewa¹, P. B. D. Jeewanthi¹, W. M. P. S. Gunasekara², N. P. Vidanapathirana¹

¹*Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Hambantota, Sri Lanka*

²*Agriculture Research Station, Thelijawila, Sri Lanka*

Mushroom cultivation in Sri Lanka holds promise for improving nutrition and generating income. Despite this potential, the industry remains underdeveloped due to outdated cultivation methods, and narrow genetic base. This study evaluated the growth and yield traits of four pure mushroom strains [American Oyster (T1), Abalone (T2), China (T3), and Black Oyster (T4)] and four hybrid strains [American Oyster × Black Oyster (T5), China × Abalone (T6), China × Black Oyster (T7), and American Oyster × China (T8)] to identify candidates best suited for commercial cultivation. The experiment was conducted using a Completely Randomized Design (CRD) with 20 replicates per treatment. All strains were cultivated on a 950 g substrate mix (albizia sawdust-50 kg, rice bran-5 kg, dhal flour-500 g, calcium carbonate-1 kg, and magnesium sulfate-100 g) with moisture adjusted to 60–65%, then sterilized and inoculated under aseptic conditions. Incubation was maintained at 25±2°C and 80–85% humidity. Data on spawn run duration (days), stalk length (cm), cap diameter (cm), yield (g), and biological efficiency (BE%) were collected weekly over eight weeks from the day of inoculation and analyzed using ANOVA and Tukey's HSD test. Results showed significant differences ($p < 0.001$) among strains in spawn run duration, yield, and BE. Hybrid strain T8 had the fastest colonization (23.87±2.09 days), while T4 had the slowest (49.45±8.71 days). T6 recorded the highest yield (98.5±44.08 g) and BE (10.36±4.64%), indicating its strong production potential. In contrast, T1 recorded the lowest yield (34.32±12.97 g) and BE (3.61%), highlighting its limited commercial value. Morphological differences among strains were not statistically significant, although T6 had the longest stalks (4.85±1.75 cm) and T3 the largest caps (10.71±1.52 cm). T5 and T3 recorded the shortest stalks (3.09±0.67 cm) and smallest caps (9.74±1.63 cm), respectively. Overall, hybrid strains particularly involving the China strain out performed pure strains in both yield and biological efficiency. This suggests that hybrid vigour plays a key role in enhancing growth and productivity traits. The superior performance of specific hybrid strains underlines their potential for large-scale cultivation in Sri Lanka. However, to support industry-wide adoption, future research should assess additional traits such as nutritional content, shelf life, disease resistance, and adaptability to diverse substrates and agro-climatic zones.

Keywords: *Commercial mushroom farming, Growth performance, Mushroom strains, Yield traits*