

Modeling The *Pleurotus ostreatus* (Oyster Mushroom) Optimum Production Using Simplex Centroid Design

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ABSTRACT

In many agricultural experiments the overall mixture response has proved to be more useful than the pure blend responses as in seed mixtures and soil mixtures. This study focused on blend selected substrates for an optimal growth rate and yield of *Pleurotus ostreatus* (Oyster mushroom) Simplex-centroid design was used to optimize substrates mix ratio for the *pleurotus ostreatus* fast growth rate and maximum yield. Previous studies had indicated wheat straw and beans trash as the highest yielding substrates and hence they formed the subsystem of interest in the coefficient matrix among sugarcane peels and sawdust. The results showed significant variability on the different substrate compositions used under the study. Sawdust yielded most under the pure blend at 1.1 KG per experimental unit while on the mixed blend ikoka (star grass-*cynodon plectostachyus*) and sawdust produced the highest yield at 1.3KG per experimental unit. Response surface graphics were used to display the peak performance combinations. It is expected that the findings would enhance Oyster production and hence provide an alternative source of protein, vitamins and act as an alternative to organic farming. Given that the arable land in Kenya has continued to decrease with most crop production and sustainability becoming unreliable mushroom cultivation has the potential to reduce poverty vulnerability for the landless poor and empower communities through the generation of income given that Oyster mushroom cultivation requires very small space, it is a fast growing and a high nutrient crop.