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# Utilization of Agro-wastes for Biotechnological Production of Edible Mushroom

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**Abstract :** Agro-wastes are wastes produced from various agricultural activities and include manures, corncob, plant stalks, hulls, leaves, sugarcane bagasse, oil-palm spadix, and rice bran. In farming situation, the agro-waste is often useless and, thus, discarded. Huge quantities of waste resources generated from Nigerian agriculture could be converted to more useful forms of energy, which could contribute to the country's primary energy needs and reduce problems associated with waste management. Accumulation of agro-wastes may cause health, safety, and environmental concern. However, biotechnological use of agro-waste could enhance food security through its bioconversion to useful renewable energy. Mushrooms are saprophytes which feed by secreting extracellular enzymes, digesting food externally, and absorb the nutrients in net-like hyphae. Therefore, mushrooms could be exploited for bioconversion of the cheap and numerous agro-wastes for providing nutritious food for animals, human and carbon recycling. The study investigated the bioconversion potentials of Pleurotus florida on agro-wastes using a simple and cost-effective biotechnological method. Four agro-wastes; corncobs, oil-palm spadix, corn straw, and sawdust, were composted and used as substrates while the biological efficiency (BE) and the nutritional composition of P. florida grown on the substrates were determined. Pleurotus florida contained 26.28-29.91% protein, 86.90-89.60% moisture, 0.48-0.91% fat, 19.64-22.82% fibre, 31.37-38.17% carbohydrate and 5.18-6.39% ash. The mineral contents ranged from 342-410 mg/100g Calcium, 1009-1133 mg/100g Phosphorus, 17-21 mg/100g Iron, 277-359 mg/100g Sodium, and 2088-2281 mg/100g Potassium. The highest yield and BE were obtained on corncobs (110 g, 55%), followed by oil-palm spadix (76.05 g, 38%), while the least BE was recorded on corn straw substrate (63.12 g, 31.56%). Utilization of the composted substrates yielded nutritional and edible mushrooms. The study presents biotechnological procedure for bioconversion of agro-wastes to edible and nutritious mushroom for efficient agro-wastes' management, utilization, and recycling.

**Keywords :** agrowaste, bioconversion, biotechnology, utilization, recycling
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