Evaluation of Growth and Yield of Indian Oyster Mushroom *Pleurotus pulmonarius* (Fr.) Quél. on Three Agricultural Wastes Supplemented with Cottonseed Hulls (CSH) in Uganda

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The main economic activity in Uganda is agriculture, which provides livelihood for over 80% of the country's population. However, the ever rising population on static land resources has led to decline in agricultural productivity. Consequently, there is a decline in household incomes, thus compromising government efforts to fight poverty and food insecurity. To avert this scenario, Ugandan farmers and the Ugandan Government are keen to explore and develop alternative livelihood strategies.

Mushroom cultivation offers a viable solution because currently there is a strong demand for mushrooms, locally and internationally. In order to sustain production to meet this demand, improvement of cultivation practices is paramount. Locally, cottonseed hulls (CSH) is the major substrate commonly used for cultivation, especially in urban areas, where most farmers are located. Supply of this substrate is limited as a result of decline in cotton productivity. There is scarcity of the substrate (CSH) mainly because of its multipurpose use in agricultural communities coupled with high costs of transportation from the remote cotton producing areas. Therefore, it became necessary to evaluate other alternative abundant substrates in whole or in combination with CSH in mushroom production.

Whole CSH (100%), sawdust, soybean husks, and coffee hulls were supplemented with CSH at rates of 0, 10, 20, 30, 40, and 50% were the substrate combinations tested. The substrates were separately characterized physically and chemically to determine their nutritional contents and suitability to support mushroom growth. All substrate combinations were pasteurized by steaming for 3 hours and inoculated with *Pleurotus pulmonarius*. Mycelial colonization rates, mushroom yields, and biological efficiency were determined. Sawdust formulations colonized fastest with the longest cropping cycles, whereas soy-cotton seed (in a ratio of 50:50%) substrate had the highest mushroom yields, amounting to 624.5 g per kg of substrate (weight of substrate computed on an air dry basis) and biological efficiency (BE) of 62.44%. Pure coffee produced the lowest yield of 121.3 g per kg of substrate and a BE of 13.16%.

Through the use of such alternative formulations, Ugandan farmers will maximize mushroom production by use of substrates abundant in their localities. In addition, the amount of CSH used in mushroom production will decrease, offsetting transportation costs and the possibility of pest and disease transmission from one locality to another.