



Tropentag, September 17-19, 2013, Stuttgart-Hohenheim
“Agricultural development within the rural-urban continuum”

Utilisation of Agro-Industrial Wastes for the Cultivation of *Pleurotus tuber-regium* (Fries) Singer, a Nigerian Edible Mushroom

SEGUN GBOLAGADE JONATHAN, BUSAYO BABALOLA

University of Ibadan, Dept. of Botany, Mycology & Biotechnology Unit, Nigeria

Abstract

In this study 16 agro-industrial wastes as well as simple organic and inorganic compounds were annexed for vegetative growth and fruitbody production of *Pleurotus tuber-regium*, a Nigerian edible medicinal mushroom. Utilisation of these wastes for mushroom growing will be helpful in their conversion to edible protein in terms of mushroom fruit bodies. Different wastes (substrates) were used to cultivate this functional food. Each investigation was carried out in three replicates and the experimental set up was in a completely randomised block design using standard methods. The results obtained were subjected to analysis of variance (ANOVA) using general linear model options of SAS, while test of significance was determined by Duncan's multiple range test at 0.5% level of probability.

Pleurotus tuber-regium produced different degrees of mycelia biomass on varieties of agro-industrial wastes used. *Khaya ivorensis* sawdust produced the best mycelia extension (65.0 mm), followed by *Terminalia ivorensis*, cotton wastes and rice straw ($p \geq 0.05$), while poultry manure stimulated mycelia extension by 3.0 mm, which was the least. Among different growth media used, malt extract agar stimulated the best growth of 98.3 mm, while potato dextrose agar produced mycelia growth of 95.0 mm, closely followed by yeast extract, sorghum, millet, and corn meal agar with mycelia extension of 87.7, 86.0, 85.0, and 80.0 mm, respectively. Sweet potato agar produced the least mycelia extension of 10.0 mm. Effect of organic carbon and nitrogen compounds on the growth of *Pleurotus tuber-regium* in submerged liquid culture showed that glucose and yeast extract were the best carbon and nitrogen compounds with 205.3 and 210.0 mg per 30 cm³, respectively. Solid state fermentation of agro-industrial wastes showed that composted *Khaya ivorensis* sawdust produced an average of 15 fruitbodies after the first flush, while non composted sawdust of the same wood produced an average of 9 fruitbodies after the first flush.

Keywords: Agro-industrial wastes, cultivation, environment, *Pleurotus tuber-regium*, pollution