

Cultivation of *Lentinus squarrosulus* (Mont.) Singer on Sawdust of Selected Tropical Tree Species

John Aroye Okhuoya, Emmanuel Oluwadare Akpaja, & Abbot Oghenekaro

Botany Department, Faculty of Science, University of Benin, Benin City, Nigeria

Lentinus squarrosulus (Mont.) Singer was cultivated on the sawdust of five economic tropical tree species. The sawdust of *Chlorophora excelsa*, *Celtis* sp., *Guera cedrata*, *Nesogordenia papaverifera*, and *Brachystegia nigerica* were collected during processing at the saw-mill. The pure culture of the mushroom used in this study was that of strain LS001UBNIG, obtained from the mushroom bank of the Botany Department, University of Benin. The planting spawn of this mushroom was raised on a sorghum-based material. The different sawdust types were then separately sun-dried for several days until the weight became constant. The experiment had two controls. The first set of control comprised individual sawdust types without any supplement, while the second control

was done by supplementing each sawdust type with 1% calcium carbonate (CaCO_3) and 1% sugar. In one treatment, each sawdust type was supplemented with 1% CaCO_3 , 1% sugar, and 10% wheat bran. The second treatment was achieved by supplementing each sawdust type with 1% CaCO_3 , 1% sugar, and 20% wheat bran. The moisture content of each sawdust type was adjusted to 70%. Five replicate bags, each containing 300 g oven-dried weight equivalent of the moistened sawdust were prepared for individual sawdust type. Thereafter, the substrate-filled bags were each covered with cotton wool and steamed for 4 hours on 2 consecutive days.

The pasteurized substrates were then allowed to cool down, and subsequently, were inoculated with

spawn of the mushroom at 5% level of spawning. The mushroom was able to colonize all the different substrate/supplement combinations, except the sawdust of *Celtis* sp., which totally failed to support the growth of the mushroom mycelium at the wheat bran supplementation of 20%. Time for mycelium colonization of the substrate ranged from 7.80 ± 0.49 days in *Celtis* sp., supplemented with 1% sugar, 1% CaCO_3 , and 1% sugar; to 17.50 ± 6.50 days in the sawdust of *C. excelsa* supplemented with 1% CaCO_3 , 1% sugar, and 10% wheat bran. The earliest time of primordial emergence was 20.60 ± 0.16 days (on sawdust of *B. nigerica* without any addition of supplements), while the longest time (42.00 ± 1.00 days) of the same parameter was observed on the sawdust of the same tree species supplemented with 20% wheat bran. The highest yield of 16.17

was found when the sawdust was supplemented with 1% CaCO_3 , 1% sugar, and 10% wheat bran, while the lowest value for the same parameter was found in the sawdust of the same tree species when supplemented with 1% CaCO_3 , 1% sugar, and 20% wheat bran.

The results of this study show that the mushroom *Lentinus squarrosulus* did not show any particular trend with an increase in the level of supplementation. Rather, in some cases, the yield of the mushroom was reduced following an increase in supplementation. The results, therefore, suggest the need for appropriate balancing of the carbon/nitrogen ratio in order to achieve maximum yield. Also, the study underscores the need for guided use of sawdust types along with the required appropriate supplements.