Cultivation of *Lentinus sajor-caju* using different agricultural waste products

A Dissertation Submitted to

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Submitted by

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RECOMMENDATION

This is to certify that Ms.Neelam Kalyan has carried out the dissertation work entitled "**Cultivation of *Lentinus sajor-caju* using different agricultural waste products"** under our supervision. This result has not been submitted elsewhere for any other academic degree. We, therefore, recommend this dissertation for the partial fulfillment of Master's Degree in Botany from Tribhuvan University, Nepal.

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LETTER OF APPROVAL

This dissertation paper submitted by Ms. Neelam Kalyan entitled "**Cultivation of *Lentinus sajor-caju* using different agricultural waste products"** has been accepted as a partial fulfillment of M.Sc. Degree of Botany.

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Neelam Kalyan

ABSTRACT

Oyster mushroom, *Lentinus sajor-caju was* cultivated on selected agricultural waste products such as maize stalk, banana leaves and pea wastes. The experiment was conducted at CDB, T.U. Kirtipur, with an objective to find out low cost substrates and appropriate supplements for the cultivation of *L. sajor-caju*. The experiment was laid out in a complete randomized design (CRD) with three to five replications. The data was analyzed on various aspects like spawn running, appearance of pin heads, mushroom yield, biological efficiency, size and number of fruiting body. Mycelial extension was also measured weekly (between seven days interval) during spawn running.

Altogether nine treatments of mixtures of selected substrates with supplements were tested. Each substrate was supplemented with 10 % of rice bran and 10 % of chicken manure. The substrate without supplement was considered as control. The chemical analyses of the substrates were not done. Out of three substrates, highest yield of *L. sajor-caju* was obtained in maize stalk followed by pea waste and banana leaves respectively.

The extension of mycelial growth was found fastest in maize stalk supplemented with rice bran 6.04 cm/week and slowest growth in banana leaves without supplement 3.84 cm/week. The fastest colonization period (22.80 days), primordial formation period (29.00 days) and first harvest period (32.80 days) was found in maize stalk supplemented with rice bran.

The biological efficiency of maize stalk supplemented with rice bran was higher (87.03 %) followed by control (70.16 %) and chicken manure supplement (67.89 %) respectively. However, in case of pea waste, the biological efficiency with rice bran supplement was 74.88 % followed by chicken manure supplement, 58.57 % and control, 56.06 %. Similarly, the biological efficiency in banana leaves with rice bran supplement was 38.37 % followed chicken manure supplement, 32.82 % and control, 23.72 %.

The study result showed that maize stalk is the best among the all substrate while it is supplemented with rice bran.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

% = Percentage

^{O}C = Degree Centigrade

Gm = gram

BE = Biological efficiency

PPD = Plant Pathology Department

Spp. = Species (Pleural)

CDB = Central Department of Botany

DAP = Diammonium Phosphate

CAT = Centre for Agriculture Technology

NARC = Nepal Agricultural Research Council