

Original Research Article

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## Harvesting Period and Yield of *Pleurotus sajor-caju* on Different Agro-Substrate

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### ABSTRACT

#### Keywords

*Pleurotus sajor-caju*, Cultivation, Harvesting period and Substrate

#### Article Info

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*Pleurotus sajor-caju*, a nutrient rich mushroom was cultivated on four different substrates, viz. Wheat straw, Paddy straw Maize stalk and Typha Leaves substrates. It was observed Wheat straw followed by paddy straw Wheat straw, Maize stalk and Typha Leaves. The third harvesting was complete in 42 days in case of wheat straw, which was statistically more compared to paddy straw and maize stalk. The effect of various substrates on the yield of fresh mushroom the result indicated that higher yield of 475.00 g ½ kg was obtained on wheat straw followed by paddy straw and maize stalk, the minimum yield of basidiocarp of 285 g ½ kg was recorded in Typha Leaves.

### Introduction

Food production in large quantity is a challenge but safe disposal of crop residues is a great problem. Edible fungi are natural recycler which converts lignocelluloses wastes into protein rich health food. Malnutrition is a problem in developing third world countries. The Food and Agriculture Organization have recognized mushrooms as food contributing protein nutrition to the countries depending largely on cereals.

*Pleurotus* species is simply a micro fungus. Cultivation in rural area helps to solve the problem of agro-waste management in a

profitable way by producing a highly nutritious food item the mushrooms along with upliftment of those area. *P. sajor-caju* the most common oyster mushroom species, on dry weight basis contains protein 47.93%, reducing sugar 0.28% ascorbic Acid 0.06%, ash 8.25% non reducing sugar lacking starch 9.12% and fat 2.26% Bahl, (1994) and Dhoke (2001). High Potassium to sodium ratio contain in *pleurotus* species helps to cure patients suffering from hypertension and heart diseases, Mushroom as an excellent Food source to alleviate Malnutrition in developing countries due to their Flavor, Texture nutritional value and high productivity per unit area. *Pleurotus sajor-caju* prefers different

agro wastes for its cultivations. The present investigation was planned with the objective to study the effect of different agro-wastes on harvesting and yield of basidiocarp of *P. sajor-caju*. In view of above facts and notions, the present study was carried out with the specific objective viz to measure of harvesting Period and Yield of *Pleurotus Sajor-Caju* on Different Agro-Substrate.

### **Materials and Methods**

Experiment was conducted during 2011-12 in plant pathology and Eco-pathology Lab, Department of Botany, U.P. College Varanasi. The pure culture of *Pleurotus Sajor-caju* was maintained in MEA slants used for preparation of master and mushroom seed OR spawn used in present study.

### **Preparation of spawn**

The success of mushroom production depends on selecting the ideal seed material (Spawn). The mycelium of mushroom fungus is multiplied on a grain bask for the purpose of mushroom production and is called spawn. The spawn of *Pleurotus sajor-caju* was prepared on wheat grains by grains by technique already described by lamke (1972) and slightly modified by Awasthi and Singh (1993). Wheat grains were washed in tap water and boiled. The excess water was drained off and wheat grains were spread over blotting paper sheet for soaking of excess water calcium carbonate and calcium sulphate (Gypsum) were mixed at the rate of 0.5 and 2.0% respectively and dry weight basis with boiled grains of wheat. Thereafter, 300 gram grains per bottle were filled in empty glass bottles (500 ml Capacity) and plugged with cotton. The plugs were wrapped with aluminum foil and steam sterilized for 2 hrs at 15 lb pressure in an autoclave. The sterilized and cooled bottles were inoculated under aseptic condition, with cultures of

*Pleurotus sajor-caju*. The bottles got nearly half filled in 10 days and full in 18-21 days with white mycelia growth and were used for production of *P. sajor-caju*.

### **Cultivation**

Various plant materials viz, wheat, Paddy, Fenugreek, Maize and Typha Leaves were used to study the harvesting period and yield of basidiocarp *P. sajor-caju*. The standard polythene bag method of cultivation was used. The polythene bags of 70-100 gauges thickness and 35 X 45 cm. sizes were used, which was sufficient to accommodate 500 gram of dry weight straw, the bag was provided with five vent holes at bottom and 3-4 at top. The polythene bags were sterilized in 2% formalin by dipping. The lower corners of the bags were tied with string so that the bed assumed a round shape after filling the straws. The dry weight substrates were chopped to small pieces (3-5 cm) and soaked in cold water for 3-5 hrs. After soaking, the substrate was taken out and the excess of water drained of these substrates were then sterilized in autoclaved at 15 lb P.S.I. for 15-30 min. After autoclaving the substrate was cooled down to filling the polythene bags. The organic mixture @ 1% i.e.20 gram dal powder per bags.

The growing room used was partially ventilated with diffused light. The relative humidity was maintained above 80% by sprinkling the walls and floor with water and the temperature was maintained range 22-26 °C. Due care was taken for proper air circulation. The procedure of Bahl (1988), Singh *et al.*, (1995), Dhoks *et al.*, (2001) was adopted with certain modifications for cultivation of *P. sajor-caju*. Daily observations were recorded for total harvesting period and yield of basidiocarp of *P. sajor-caju* on different substrates.

## Results and Discussion

Harvesting period of *P. sajor-caju* on different for 1<sup>st</sup> 2<sup>nd</sup> and 3<sup>rd</sup> picking presented in Table 1. The Harvesting period of *Pleurotus sajor-caju* for third picking varied from 42-43 days in various substrates. The day required for first picking indicated, that wheat straw took 22 days to produce first harvesting mushroom, with regard to paddy straw they took 21 days to produce first crop of harvestable mushroom and a minimum of 19 and 20 day required for Typha Leaves for the first picking of mushrooms. For second Harvesting Typha Leaves took maximum were day (32 days)

while wheat straw took minimum (29 days). The third harvesting was complete in 42 days in case of wheat straw, which was statistically more compared to paddy straw and maize stalk. The effect of various substrates on the yield of fresh mushroom the result indicated that higher yield of 475.00 g ½ kg was obtained on wheat straw followed by paddy straw and maize stalk, the minimum yield of basidiocarp of 285 g ½ kg was recorded in Typha Leaves. The result obtained were in conformity with patil *et al.*, (1989) and Dhoke *et al.*, (2001) Patil and Jadhav (1997) who also reported good growth of *Pleurotus spp.* on paddy straw and wheat straw.

**Table.1** Effect of different substrates on harvesting period (days) and Yield of basidiocarp (g) of *Pleurotus sajor-caju*

Substrates	Average yield of basidiocarp/500g dry weight of substrate						
	1 <sup>st</sup> Picking		2 <sup>nd</sup> Picking		3 <sup>rd</sup> Picking		Total yield
	Day	yield	Day	yield	Day	yield	
<b>Wheat straw</b>	22	300	29	120	42	50	470
<b>Paddy straw</b>	21	270	30	100	42	40	410
<b>Maize stalk</b>	20	200	30	80	42	40	320
<b>Typha Leaves</b>	19	176	32	75	43	35	285

It is therefore recommended to grow mushroom *P. sajor-caju* on the substrate of wheat straw, paddy straw, maize stalks and Typha Leaves which are easily available and have a higher yield of basidiocarp of *Pleurotus sajor-caju*.

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