

## Effect of pretreatment of substrate on the yield of oyster mushroom, *Pleurotus sajor-caju* Fr.) Singer

---

**B. K. PANI AND S. R. DAS**

Centre of Tropical Mushroom Research and Training Department of Plant Pathology, O.U.A.T.,  
Bhubaneswar

---

Effect of chemical and hot water treatments of cultivation substrate on the yield of *Pleurotus sajor-caju* was studied. All the treatments except Dithana M-45 gave significantly higher mushroom yield over untreated substrates. Highest yield (95%) BE was recorded with substrates treated with Bavistin 75 ppm + Formalin 500 ppm which was statistically *at per* with the yields obtained from substrates pasteurized with hot water (70-80°C) and bavistin 75 ppm.

**Key words :** Pretreatment, substrate, yield, oyster mushroom

---

### INTRODUCTION

Many fungi associated with undecomposed substrates are known to interfere with cultivation of mushrooms often reducing the yields. For pasteurization of substrates, use of hot water at 80°C for 1 or steaming above 80° for 1 has been recommended (Junkova, 1971; Patil and Jadhav, 1989). Sterilization of substrate in autoclave at 15 lb p.s.i. (121°C) for -2 has also been suggested (Zadrazil and Brunnert, 1980). However, all these methods are costly besides being limiting factors for large scale production of the crop. Therefore, the present investigation was conducted to study the effect of pretreatments of paddy straw with fungicides and hot water on the sporophore production of *P. sajor-caju*.

Well dried paddy straw was chopped into 5-7 cm pieces and steeped for 18 in Bavistin (75 ppm), Formalin (500 ppm), Bavistin (75 ppm) + Formalin (500 ppm), bleaching powder (100 ppm), Dithane (M-45 (100 ppm) and ordinary water. The straw soaked in plain water was also treated with hot water at 70-80°C for 1. Moisture content of substrate at the time of spawning was maintained at 65-67 percent. Polythene bags (40x80 cm, 150 gauge) were used for mushroom cultivation. Spawning was done with one month old wheat grain spawn in four layers @ 3 per cent of wet substrate. Each treatment was replicated . After 15-20 per cent. Mushrooms were harvested from three flushes and fresh weights were recorded. Biological efficiency was calculated as the ratio of fresh weight of mushrooms to the dry weight of substrate per bag and was expressed as per cent. The yield data were statistically analysed.

It was observed (Table 1) that all the treatments except Dithane M-45 100 ppm supported significantly higher mushroom yield over untreated substrates. The treatment of paddy

straw with Bavistin (75 ppm) + Formalin (500 ppm) recorded the highest yield (95% BE) as compared to other treatments. This is in corroboration with the report of Vijayans Sohi (1987). The yields obtained in response to pretreatment of substrates with Bavistin (75 ppm) + Formalin (500 ppm), hot water and Bavistin 75 ppm were statistically *at par*. All these treatments completely checked the incidence of contaminants from the substrates resulting into an excellent spawn run. There was no significant difference between Formalin (500 ppm) and bleaching powder (100 ppm) in supporting sporophore

**Table 1.** Effect of pretreatment of paddy on the yield of *P. sajor-caju*

Treatment	Days Taken for pinning	Number of Sporophores	Weight of Sporophores (g)	Biological Efficiency (%)
Bavistin 75 ppm	20	280	1375	91.6
Formalin 500 ppm	22	265	1275	85.0
Bavistin 75 ppm + Formalin 500 ppm	19	299	1425	95.0
Bleaching Powder 100 ppm	22	255	1225	81.6
Dithane M-45 100 ppm	22	249	1125	75.0
Hot water	20	285	1385	92.3
Control (Plain water)	22	241	1075	71.6

Each observation is the average of three replications.

C.D. (0.05) = 75.8

production of *P. sajor-caju*. Dithane M-45 (100 ppm) appeared to be least effective among the pretreatments including only a marginal increase in yield over control. In general, the fungi took 19-22 days for pinhead formation. The number and weight of sporophores were directly proportional to each other.

It is inferred from the study that chemical and hot water pasteurization of paddy straw can substitute each other for obtaining higher sporophore yield of oyster mushroom.

## REFERENCES

- Junkova, A. (1971). Intensivni a extensivni zpusob pestovani hlivy ustricne. *Mykol. Sb.* **8**: 53-54.  
 Patil, B. D. and Jadhav, S.W. (1989). Studies on cultivation of *Pleurotus sajor-caju* on different substrates. *J. Maharashtra Agril, Univ.* **14**: 156-158  
 Vijay, V. and Sohi, H.S. (1987). Cultivation of oyster mushroom, *Pleurotus sajor-caju* (Fr.) Singer on chemically sterilized wheat straw. *Mushroom news Let Tropics* **7**: 67-68.  
 Zadrazil, F. and Brunnert, H. (1980). The influence of ammonium nitrate supplementation on degradation and *in vitro* digestibility of straw colonised by higher fungi. *Euro. J. Microbiol. Biotechnol.* **2**: 37-44

(Accepted for publication 4th. Sept. 1997)