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Short Communication

Cultivation of *Calocybe indica* (P and C) during different months and influence of temperature and relative humidity on the yield of summer mushroom

D. Senthilnambi*, A. Eswaran and P. Balabaskar

Department of Plant Pathology, Faculty of Agriculture, Annamalai University, Annamalainagar - 608 002 India.

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The present study was conducted with the aim of finding out the most favourable month for the cultivation of *Calocybe indica* and records the influence of temperature and relative humidity on mushroom yield. Significant variation in the yield and other parameters existed when *C. indica* was grown during different months of 2004 to 2005. In summer months (March to July), a general increase in mushroom yield was observed. The maximum yield was recorded in the month of July 2005 (450.6 g per bed). However, the yields obtained in the months of April, May and June 2005 was found to be on par with that of the above observation. Mushroom attained harvesting maturity almost one day earlier during monsoon months. In addition, during this period, the average weight of individual mushroom was found to be comparatively high. Interestingly, a marginal but comparable reduction in stipe length was noticed during summer months

Key words: *Calocybe indica*, yield, temperature, relative humidity.

INTRODUCTION

Mushrooms have existed for millions of years and mankind has regarded them as a valuable food and at present, mushroom cultivation is the only economically viable biotechnology process where waste materials or crop residues may be converted into valuable food. Though a revolution in mushroom cultivation has been witnessed, serious effect are needed to perfect the production technologies of newer edible mushroom including *Calocybe indica* (Chandha and Purkayastha, 1976) in order to bring India on the mushroom map of the world. First attempt on the induction of fruit bodies of *C. indica* in culture was made almost two decades ago (Purkayastha, 1982). However, till date only limited success was achieved on its cultivation and exploitation (Purkayastha and Nayak, 1981; Purkayastha, 1982; Eswaran and Thomas, 2003). Therefore, the present study was conducted with the aim of finding out the most favorable month for the cultivation of *C. indica* and records the influence of temperature and relative humidity on mushroom yield.

MATERIALS AND METHODS

Paddy straw substrate was soaked in cold water for 4 h. After draining excess water, the materials were treated in hot water (80°C) for 60 min and dried in shade. For the bed preparation, polythene bags of 60 x 30 cm size and 100 gauge thickness was used and cylindrical beds was prepared using 0.5 kg of substrate (dry weight) per bed. The ill-filled paddy grain spawn of *C. indica* was used at 6% level to the wet weight of the substrate and the beds were spawned following layer method of spawning (Baskaran et al., 1978). After 10 to 15 days, when the beds were fully colonized by the mushroom fungus, they were cut into two equal halves and applied with casing soil to a height of 2 cm over the spawn run substrate in each of the half bed. The beds were uniformly and regularly sprayed with water. To assess the performance of *C. indica* in different months, mushrooms beds were laid out from April, 2004 to March, 2005 at monthly intervals. Yield of mushroom along with other morphological characters and weather parameters were also recorded.

*Corresponding author. E-mail: goldnams@yahoo.com.

Table 1. Yield performance of *C. indica* during different period of year 2004 to 2005

Month	Temperature (C)			Mean relative	Rain fall (mm)	Average weight	Number of buttons	Yield (g/bed)	Bio-efficiency
	Maximum	Minimum	Mean	humidity (%)	Maximum	(g/button)	harvested		
2004									
April	36.4	25.4	31.9	90.0	-	66.7	6.3	420.1	168.0
May	34.5	25.8	31.2	93.0	279.3	65.3	6.5	424.2	169.7
June	36.0	24.7	31.4	90.0	39.0	66.5	6.5	432.5	173.0
July	35.6	24.3	31.2	91.0	13.5	69.3	6.5	450.6	180.2
August	36.7	25.2	31.0	89.0	65.2	61.8	5.8	358.3	143.3
September	32.7	24.1	28.4	87.0	264.8	60.7	5.3	321.8	128.7
October	31.0	23.5	27.3	88.0	615.8	54.2	5.8	314.2	125.7
November	29.0	22.4	25.7	90.0	371.0	55.1	5.0	275.4	110.2
December	29.0	20.9	25.0	91.0	33.9	52.9	5.3	280.4	112.2
2005									
January	29.9	20.5	25.2	88.0	0.7	57.6	5.8	334.0	133.6
February	32.8	20.1	26.5	86.0	14.3	64.2	6.0	385.0	154.0
March	33.7	23.0	28.4	89.0	15.4	64.6	6.3	406.7	170.7
CD (P = 0.05)	-	-	-	-	-	1.48	0.2	18.43	-

RESULTS AND DISCUSSION

The results obtained on the performance of *C. indica* during different months are presented in Table 1. Significant variation in the yield and other parameters existed when *C. indica* was grown during differentmonths of 2004 to 2005. In summer months (March to July), a general increase in mushroom yield was observed. The maximum yield was recorded in the month of July 2005 (450.6 g per bed). However, the yields obtained in the months of April, May and June, 2005 was found to be on par with that of the above observation. Mushroom attained harvesting maturity almost one day earlier during monsoon months. In addition, during this period, the average weight of individual mushroom was found to be comparatively high. Interestingly, a marginal but comparable reduction in stipe length was noticed during summer months. Increase in mushroom yield had a positive relationship with the reduction in temperature and increase in relative humidity.

Similar reports were made by earlier workers. Jandaik and Kapoor (1974) reported that 20 to 28°C temperature was optimum for obtaining maximum yield of *Pleurotus flabellatus. P. flabellatus* required relative humidity (RH) of 70 to 80% for its cultivation which is lower than required for *Pleurotus sajorcaju* (Chadha, 1992). Similar findings have been reported in India earlier by Jadhav and Jagtap (1991), Patil and Jadhav (1994) and Sarkar et al. (1995) but *C. indica* required a temperature range of 30 to 32°C and more than 90% RH for its better yield. But some insect infestation and bacterial infections in bed was observed during rainy season which is a major constraint for the cultivation of *C. indica*.

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