

Effect of depth and time of casing on casing colonisation and yield of *Calocybe indica*

G. DEB

Serampore College, Serampore, Hooghly, West Bengal

In the cultivation of *Calocybe indica*, a depth of one cm casing with a mixture of clay and sandy loam soil in equal proportion on the day of spawning was found to be ideal for the colonisation of the mycelia. Casing layer of one cm depth on the date of spawning also produced highest yield. Delay in casing resulted in poorer yield.

Key words : Casing, colonisation, substrate, supplementation

INTRODUCTION

Casing means covering the substrate for mushroom cultivation with a layer of soil or soil like materials after spawning or after spawn run. Practice of the application of casing material to cover the substrate enhance the transformation of vegetative phase to reproductive phase which is most important to obtain proper development of fruitbodies. With a view to develop good management practices for application of casing material in the cultivation of *Calocybe indica*, a study was undertaken to find out the effects of depth and time of casing on the colonization of casing layer and yield of the mushroom. The results are presented in this paper.

MATERIALS AND METHODS

The culture of *Calocybe indica* was obtained from Mushroom Research Unit, Department of Pathology, Bidhan Chandra Krishi Viswavidyalaya.

The cultivation of the mushroom was done in chopped paddy straw in earthen trays (30 cm diameter × 6.15 cm deep) (Chakravarty *et al.*, 1981). A 2 cm layer of soaked, chopped straw was placed at the bottom of the tray and 4 g of NPK fertilizer (15:15:15) was spread uniformly on the straw. This was again covered with 1 cm layer of straw on which 5 g of a mixture of CaCO₃ and CaSO₄ (3:1) and 20 g of spawn was spread uniformly in a layer and was covered with 1.5 cm thick layer of straw.

For casing material a mixture of clay and sandy loam soil (0.5-0.1 cm granule size) in the ratio 3:1 was used. Soils were collected from about 10 cm depth from barren land. Casing materials were sterilized by using 0.2% formaldehyde solution and kept for 48 hrs in closed containers and then opened to remove fumes and smell.

To determine the amount of casing material required for different depth of casing layer, an even layer of soil 1cm deep was placed on a tray of 30 cm diameter and its weight was taken. From this the amount of soil required for different depths of casing was determined.

After 20 days spawn run colonised and uncolonised areas on the surface of the casing soil was marked on a transparent paper and their areas were calculated by using a graph paper.

RESULTS

The data on the mycelial growth of *Calocybe indica* in the casing layer at different depths and time are presented in Table 1. The results showed that upto 1 cm there was increase in level of colonisation of the casing layer, but as the depth increased beyond 1cm there was gradual reduction in the level of colonisation. Casing on the day of spawning resulted highest rate of colonisation and delayed casing proved to have detrimental effect on the colonisation.

The result on the effects of the depth and time of casing on the total yield of first and second flushes of *Calocybe indica* are presented in Table 2. Two results showed that in case of yield also there was increase upto 1 cm depth of casing and there was reduction in yield as the depth further increased. When casing was done on the day of casing, the yield was highest but delay in casing resulted in poorer yields.

Table 1 : Effect of depth and time of casing on the colonisation of the casing layer of *Calocybe indica*.

Depth of Casing in cm	Mycelial growth coverage (%) in the casing layer cased on day after spawning			
	0	5	10	15
0.5	69.28* (56.31)	66.87 (54.89)	62.05 (51.99)	23.12 (28.75)
1.0	93.33 (75.03)	91.66 (73.21)	93.0 (74.66)	46.0 (42.71)
1.5	66.33 (54.54)	62.0 (51.94)	56.0 (48.45)	13.0 (21.13)
2.0	34.55 (36.02)	13.66 (23.84)	12.66 (20.85)	8.66 (17.11)
2.5	16.33 (23.84)	14.0 (21.97)	9.66 (18.11)	8.33 (16.77)

* Data based on average of 3 replicates.
 Values in parentheses indicate angular transformed values
 C.D (0.05) for mycelial growth 2.335
 C.D (0.05) for depth of casing 2.62
 C.D (0.05) for mycelial growth × depth of casing 5.24

Table 2 : Effect of depth and time of casing on the yield of *Calocybe indica*.

Depth of Casing in cm	Yield (g/kg of dry straw)*			
	Cased on day after spawning			
	0	5	10	15
0.5	276.05	183.13	180.0	0
1.0	286.20	238.08	212.28	0
1.5	269.12	166.90	148.18	0
2.0	238.46	83.90	0	0
2.5	114.56	0	0	0

* Total yield of first and second flushes.
 Data based on average of 3 replicates
 C.D (0.05) for depth 131.95
 C.D (0.05) for yield 118.02
 C.D (0.05) for yield × depth of casing 157.07

DISCUSSION

Colonisation of the casing layer was found to have a direct bearing on the yield of *Calocybe indica*. The vegetative mycelium in the spawn run phase in the substrate is transformed into reproductive mycelial strands during the colonisation in the casing layer. So the extent of colonisation of casing was found to be correlated with the biological efficiency of the mushroom.

It was also evident that a depth of 1 cm thickness of casing layer was ideal for colonisation of the casing layer and produced highest yield. In a similar study on the effect of casing thickness on the yield of this mushroom by Sharma *et al.*, (1977), out of three levels of thickness viz. 2 inches (5 cm), 1.5 inches (3.75 cm) and 1 inch (2.5 cm) was found to produce highest yield. The present investigation indicates that further reduction in the thickness of the casing layer beyond 2.5 cm improved the biological efficiency of the mushroom and a thickness of 1 cm produced the optimum yield. But reduction of thickness of casing beyond 1 cm had an adverse effect on the yield.

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