

MUSHROOM CULTIVATION

1. Introduction

Cultivation of Mushroom has been in vogue for almost 300 years. However, commercial cultivation in India has started only recently. Growing mushroom under controlled condition is of recent origin. Its popularity is growing and it has become a business which is export-oriented. Today mushroom cultivation has been taken up in states like Uttar Pradesh, Haryana, Rajasthan, etc. (during winter months) while earlier it was confined to Himachal Pradesh, J&K and Hilly areas. Mushroom is an excellent source of protein, vitamins, minerals, folic acid and is a good source of iron for anemic patient. Mushrooms are of different types:

- a) Button Mushroom
- b) Dhingri (Oyster)
- c) Paddy Straw Mushroom

Of all the types, button mushroom is the most popular one. Mushroom cultivation can be done at cottage and small-scale levels besides large-scale farming.

2. Market potential

The main consumers of mushrooms are Chinese food restaurant, hotels, clubs and households. In big cities, mushrooms are sold through vegetable shops. The growing domestic and export market as also the delicacy and food value provides extensive and good potential for cultivation of mushroom.

3. Technical details

(a) *Manufacturing process*

- (i) **Preparing spawn (mushroom seeds):** Spawns are readily available in the markets. If desired, the same can be produced and sold commercially.
- (ii) **Compost preparation:** There are several mixtures for compost formation and anyone that suits the entrepreneur can be chosen. It is prepared using wheat/paddy straw into which various nutrients are added. In synthetic compost wheat straw is supplemented with nitrogen nutrients, organic and inorganic. In organic compost, horse dung is added. The compost can be prepared by long or short composting method. Only those who have pasteurizing facility can employ short cut method. In long method 7-8 turns at regular intervals are required for a period of 28 days. Good compost is dark-brown, ammonia free, little greasiness and having 65-70% moisture.

(iii) **Spewing (mixing compost with spawns):** For mixing spawn with compost any of the three procedures can be followed:

- Layer spewing: Compost is divided into equal layers and spawns spread in each layer. Result is spawning in different layers.
- Surface spewing: 3 to 5 cms of compost is remixed, spawns spread and covered with compost.
- Through spewing: Spawns are mixed with compost and pressed.
A bottle of spawns is good enough for 35 kg of compost spread over 0.75 sq.mt. area (about 2 trays). That is, spawn to compost ratio is 0.5%.
Trays are then arranged in tiers in the cropping room and covered with newspapers. 2% formalin is sprinkled over them. Desired room temperature is around 18'c with 95% humidity.
- Casing: spawned compost is covered with sterilized hay, chalk powder etc.
- Mushroom growth: Besides temperature and humidity mentioned above, proper room ventilation should be ensured.
- Cropping: Mushrooms prop up in 30-35 days. These fungal fruit bodies appear in flushes and harvested when buttons are tightly closed. In a cropping cycle of 8-10 weeks an average yield of 10 kg mushroom/sq metre is feasible. Cropped mushrooms can be packed for marketing.
 - i.) Production target: 8000 kg per annum
 - ii.) Utilities: Power: nominal
Water: Abundant supply - required

4. Details of plant & machinery

S. No.	Item	Qty	Rate (Rs.)	Value (Rs.)
1.	Tray or wooden cases	450	150.00	67,500.00
2.	Sprayers with pump	3	1,750.00	5,250.00
3.	Mistomatic automatic humidifier or cooler	1	4,500.00	4,500.00
4.	Room heater/blower	3	2,000.00	6,000.00
5.	Other equipment (thermometers, fans etc.)	-	-	4,000.00
6.	Misc. tools			2,750.00
TOTAL				90,000.00

5. Utilities (per annum)

S. No.	Particulars	Amount (in Rs.)
1.	Power (5 kw x 6 hrs x 200 days x Rs.3.50/-)	21,000.00
2.	Water	4,000.00
TOTAL		25,000.00

6. Raw material requirement (including consumables/month)

S. No.	Items	Quantity	Rate (Rs.)	Annual value (Rs.)
1.	Compost including casting soil	3000 kg.	Rs.10/kg	30,000.00
2.	Spawn	400 trays (or 800 bottles)	Rs.16/tray (Rs.8/bottle)	6,400.00
3.	Chemicals (Formaline, pesticide, insecticide etc.)	L.S	-	4,000.00
4.	Packing material	L.S	-	2,000.00
			TOTAL	42,400.00

7. Manpower requirement

S. No.	Category	Nos.	Salary/person/ month (Rs.)	Total monthly Salary (in Rs.)
1.	Skilled	01	2,000.00	2,000.00
2.	Unskilled (20 days/month)	02	1,500.00	3,000.00
			TOTAL	5,000.00

8. Working capital (at full capacity utilization)

S. No.	Items	Period	Amount (in Rs.)
1.	Raw material	15 days produce	21,200.00
2.	Recurring expenses (power + wages)	1 month	7,000.00
3.	Other misc. expenses		2,000.00
		TOTAL	30,200.00
		SAY	30,000.00

9. Cost of project

S. No.	Item	Total cost (in Rs.)
1.	Building (1000 sq.ft)	Self/on rent
2.	Plant & machinery (including installation)	90,000.00
3.	Furniture & fixture (including office equipment)	7,000.00
4.	Preliminary & preoperative expenses	3,000.00
5.	Insurance, interest during implementation, contingencies including cost escalation, etc.	10,000.00
6.	Working capital	30,000.00
		TOTAL
		1,40,000.00

10. Means of finance

S. No.	Particulars	Total cost (in Rs.)	%age
1.	Promoter's contribution	3,000.00	2.14
2.	Term loan – NSTFDC	1,25,000.00	89.29
3.	SCA – term loan/subsidy	12,000.00	8.57
	TOTAL	1,40,000.00	100.00

Note: The State Channelising Agencies shall arrange to provide subsidy to beneficiary(ies) as per norms of their Corporation. Further, SCAs may also make efforts to avail incentive/subsidy from other centrally sponsored schemes.

11. Project economics

S. No.	Items	Amount (in Rs.)
A.	Sales realization: Mushroom 8000 kg x Rs.40/kg. and compost (mushroom bed) [Rs.320000 + Rs.80000 p.a.]	4,00,000
B.	Cost of production	
(i)	Raw material (Rs.42400/produce x 3 produce including packing materials)	1,27,200.00
(ii)	Utilities (power, fuel, water etc.)	25,000.00
(iii)	Salary and wages (Rs.5000 x 12 months)	60,000.00
(iv)	Rent (Rs.2000 x 12 months)	24,000.00
(v)	Transportation/freight	5,000.00
(vi)	Conveyance & Traveling	5,000.00
(vii)	Administrative overheads (Telephone, postage, stationery etc.)	5,000.00
(viii)	Selling expenses (including advertising, distribution cost, commissions & rebates)	10,000.00
(ix)	Insurance & misc.	4,500.00
(x)	Repair & maintenance	5,000.00
(xi)	Interest	8,300.00
(xii)	Sustenance for applicant	30,000.00
	Total (rounded off)	3,09,000.00

C.	Gross profit (A-C)	91,000.00
D.	Depreciation/ @ 10% of fixed assets cost and amortisation of expenses	11,000.00
E.	Net Profit (D-E)	80,000.00

12. Viability indicators

S. No.	Particulars	Amount
1.	Repayment per annum (period - 5 years)	27,400.00
2.	Return on investment (ROI)	57.14%
3.	Debt service coverage ratio	2.78

13. Interest, moratorium & repayment period for the beneficiaries

- (a) Interest : 6% p.a. on NSTFDC term loan.
- (b) Moratorium period : 9 months from date of release of final installment by SCA.
- (c) Repayment period : 5 years excluding moratorium period.

14. Assumptions/Remarks

- Income for self owned properties would go up by Rs.24000 p.a. as rental would not be required.
- In a year, mushroom cultivation will be for 200 days mostly in winter months due to climate parameters and three produce will be taken. In States like Himachal Pradesh, Jammu & Kashmir, it is possible to cultivate throughout the year due to climate conditions.
- Technical training and assistance can be had from.
 - (a) Rashtrya Anusandhan Evam Prashikshan Kendra, Chambaghat, Solan (H.P.).
 - (b) Regional Research Lab, Jorhat, Assam.
 - (c) Regional Research Lab, Jammu.
 - (d) Central Food Technology Research Institute, Cheluvamba Mansion, Mysore
- The cost of plant & machinery has been taken on the basis of items manufactured by standard/reputed suppliers having sound service network. The suppliers should be preferably based in local areas or nearby states.
- Raw materials should be procured preferably from local areas/nearby States.
- It is assumed that the products/is having good demand in the project area.

The cost of project may vary in different States & Regions.