

# Entrepreneur India

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Detailed Project Profiles on Plantation (Agro Based  
Projects)#



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A plantation is a long, artificially-established forest, farm or estate, where crops are grown for sale, often in distant markets rather than for local on-site consumption. The term plantation is informal and not precisely defined. Plantations are developed on a large scale as the crops are grown for commercial purposes, not for local consumption. A plantation is always a monoculture over a large area and does not include extensive naturally occurring stands of plants that have economic value. Because of its large size, a plantation takes advantage of economies of scale. Protectionist policies and natural comparative advantage have contributed to determining where plantations have been located. Industrial plantations are established to produce a high volume of wood in a short period of time for each society. Plantations are grown by state forestry authorities (for example, the Forestry Commission in Britain) and/or the paper and wood industries and other private landowners. The plantation depends on a plentiful supply of cheap labor, not in the sense that its cost is low in relation to its productivity but in the absolute sense that wages are low because skills are few. For the plantation derives whatever economic advantage it has from its ability to mobilize unskilled labor to achieve greater economic return. Under certain circumstances the plantation, either private or public, enjoys distinct economic advantages over other types of farm organization. When it is desirable to introduce a new technology requiring a radical change in cultural practices, the plantation substitute's supervision-supervisory and administrative skills-for skilled, adaptive labor, combining the supervision with labor whose principal skill is to follow orders. India has a long tradition of floriculture. Rose is the principal cut flower grown all over the country, even though in terms of total area, it may not be so. The larger percentage of the area in many states is used for growing scented rose. More than two thirds of this large area is devoted for production of traditional flowers, which are marketed loose e.g. marigold, jasmine, chrysanthemum, aster, tuberose etc. Mushroom is an exotic and nutritious source of vegetarian food. It is a major horticulture product all over the world and is also becoming popular in India. Fresh mushrooms have very limited shelf life but dried and packed mushrooms have considerable shelf life.

The content of the book includes information about plantation. The major contents of this book are project profiles of projects like teak plantation, eucalyptus tree plantation, cut flower (rose), mushroom (cultivation and processing unit), papaya cultivation, rubber plantation, Shisham plantations, Amla plantations, tea plantations.

Project profile contains information like introduction. Uses and applications, market survey, supplier's addresses, plant economics, land and building, plant and machinery, other fixed assets, fixed capital, working capital requirement/annum, salary and wages/annum, utilities and overheads, total working capital/annum, cost of projects, total capital investment, cost of production/annum profit, rate of return, B.E.P.

This book is very useful for new entrepreneurs, technical institutions, existing units and technocrats.

## **Content:**

1. Teak Plantation
2. Eucalyptus Tree Plantation
3. Cut Flower (Rose) (Floriculture)
4. Mushrooms (Eou) (Cultivation And Processing Unit)
5. Papaya Cultivation
6. Rubber Plantation
7. Shisham Plantation
8. Amla Plantation
9. Tea Plantation

**Sample Chapter:**

# MUSHROOMS (EOU) (CULTIVATION AND PROCESSING UNIT)

## INTRODUCTION

Mushroom is an exotic source of vegetarian food. It is button shape when young, but assumes the shape of an umbrella, when fully matured. Most of its varieties are edible and form a tasty and nutritious diet.

Mushrooms are usually grown as a fall, winter and spring crop in special structures where the required temperatures can be maintained and where other necessary conditions can be provided. They are a difficult crop to produce.

## USES AND APPLICATION

Mushrooms are widely used as a vegetable all over the world. This vegetable is better for health because it contains carbohydrates such as sugar, starch, cellulose, or lignin and vitamins. Mushrooms are usually grown as fall, winter and spring crop in special - structure where the required temperatures can be maintained and where other necessary conditions can be provided. Their are difficult crop is produce. Apart from their usefulness as food, Cultivated Mushrooms have their applications-especially as condiments, as drugs, as a source of enzymes as a component of nutrient agars and potentially as animal feed.

The most important use of mushroom is as an article of food and its value as such is beyond the reach of the chemist or physiologist. In addition, mushrooms possess great value as condiments of food accessories. Mushrooms are among the most appetising of table delicacies and add great flavour to food when cooked with them.

## MARKET SURVEY

In India, commercial mushroom growing was first initiated in New Delhi and Salem and later it spreads to J & K, the Nilgiris, Punjab, Haryana, Chandigarh, U.P., Maharashtra, M.P., and Gujarat.

The efforts made so far for the development of mushroom cultivation in the country are riddled with misperceptions and wrong representations. A detailed study of the developments till 1990 appeared as an article in that year's The Hindu Survey of Indian Agriculture, titled "Far from a mushrooming growth".

Mushrooms are one of the foremost items of international trade in fresh dried and processed food mainly because the rate of growth in their consumption and production is the highest among agricultural commodities internationally. India can use them as one of the prime tools for agricultural development as well as for fighting malnutrition in the country.

## CANNED MUSHROOMS MANUFACTURERS/SUPPLIERS

1.M/s. IMT Farms,  
30, Saraswati Soni Marg,  
Laxman Chowk,  
Dehradun - 248001. (U.P).

2.M/s. Excelsior Food and Chemical Industries,  
A - 1, Lawrence Road,  
Industrial Area,  
Delhi - 110035.

3.M/s. United SA Corporation,  
44, Eira Street,  
2nd Floor,  
Calcutta - 700001.

4.M/s. Mahadeo Fruit Processing Industry,

21 S & T Gorachand Road,  
Calcutta - 700014.  
5.M/s. Elmac,  
20/1, BAK Mohd,  
Siddique Lane,  
Calcutta - 700016.

## B.I.S. SPECIFICATION

Till date there is no any Indian Standard specification has developed for plant processing for Mushroom, so this report does not concern any Indian Standard Specification.

For further details please contact :

Bureau of Indian Standards,  
9, B.S. Zafar Marg,  
New Delhi - 110 002.

## MANUFACTURING PROCESS

Mushrooms can be grown in any structure where it is possible to control ventiation, maintain a pasteurizing temperature of 130o - 145oF. For several days during sweating out, provide a humidity of 70-85% kept the temperature at 50-65oF, preferably crop is grown in specially constructed house. A good bed for mushrooms is one built in tiers, 2 feet being left between boards of each bed, and the bottom bed 6 inches off the floor. A house 1,200 sq.meter with 2 tiers 15 Ton Mushroom Production house size 40 x 30 height 12 ft. A ton of manure will produce 125 Kg mushroom.

The "short composting method consists of two distinct phases, the first lasting six to nine days, takes place outdoors under reduced oxygen pressure and with a high ammonia concentration. The ends is built up after the addition of water. The outer part of the pile, 10 to 15 cm in diameter is compacted strongly so as to counteract the loss of ammonia by evaporation and a decrease temperature. The internal portion, looser in texture must rapidly seed, 75oC and pH of over 8.5 Two turnings are made at two to three days intervals, all being finished by seventh day of composing. The second phase takes place in a pasteurization chamber of the pressure of oxygen (20 percent and good air circulation with a humidity approaching 100 percent and over temperature of 0oC to 60oC. Under these circumstances, phase two takes only twelve to twenty from the moment when all traces of Ammonia in the compost has gone, as far as it can be detected by smell. The pasteurization chamber, in practical growing, will be in place identical with the one where sweating out takes place, phase two is accomplished by the use of the tray system.

In our further discussion we shall therefore mention only three most desirable types of beds in the order.

1. Tray beds
2. Sheet beds
3. French beds.

### Preparation of Compost :-

The best raw material for mushroom compost is manure from grained horses and a moderate amount of straw bedding. Manure should be fresh from the stable, and it must be composted. The mushroom lives on the products of this decomposition.

### Temperature :-

A slow crop (52-55oF) will last 5-6 months whereas a fast crop (56-60oF) will last only 3 months. The cooler temperature result in somewhat larger, firmer and heavier mushrooms than the higher ones, but the total yield from either is about the same.

### Harvesting :-

Mushrooms may appear 35 days after spawning. But 6-8 weeks normally elapse after casing before enough

appear for picking to start. Unduly slow growth may be due to poor spawn, improperly composted manure, too many shavings in the manure low temperature, or unsuitable moisture.

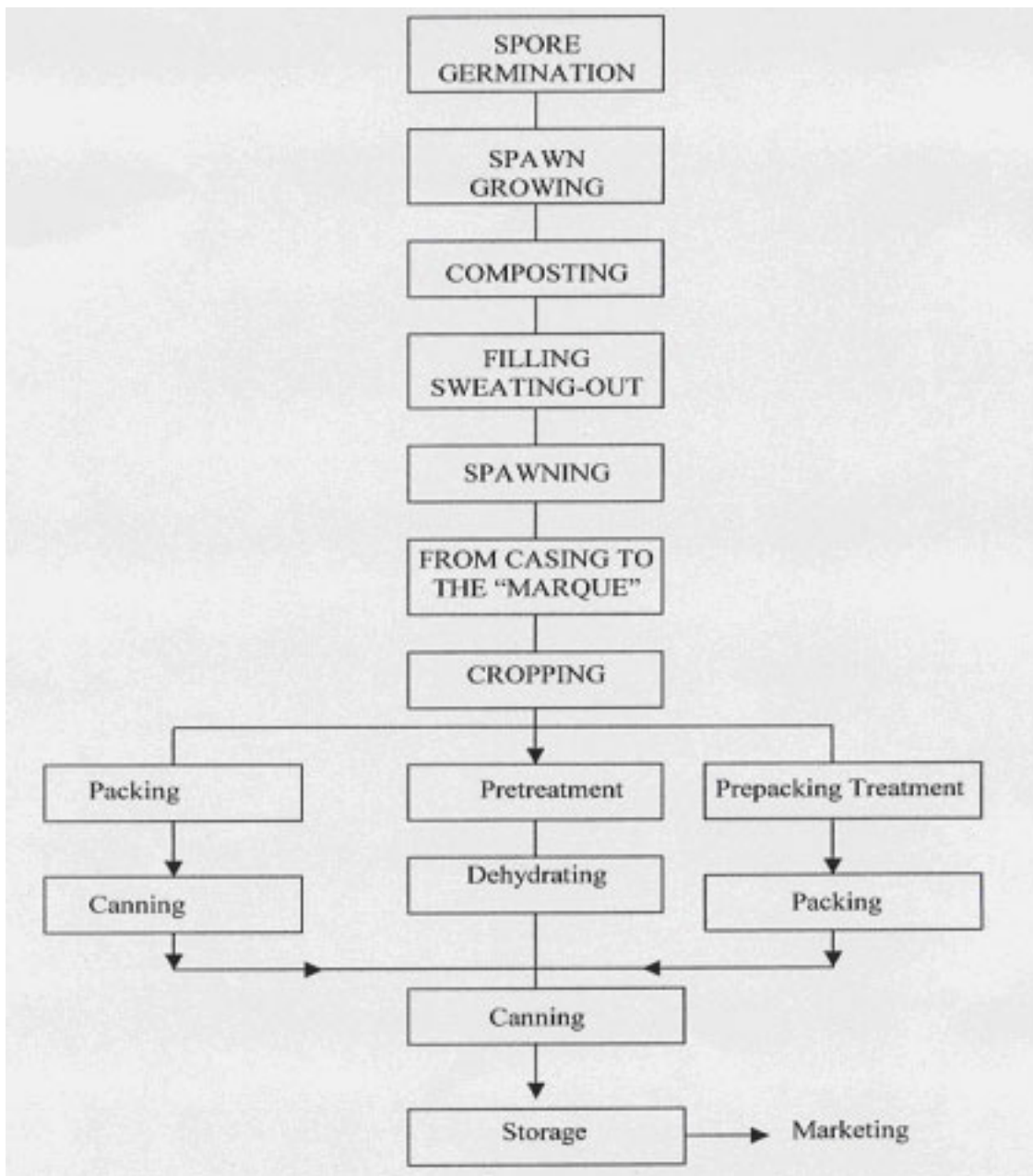
## **MUSHROOM PRESERVATION, PICKLING, DEHYDRATION, CANNING & MARKETING**

Process of preserving mushroom has for its leading object the preservation of mushroom so as to prevent the loss of their natural flavour. This object is accomplished in the preferred practice by subjecting the mushrooms to an evaporating operation at a temperature of from 100 to 150 degree F until their weight has been reduced to approximately one half through loss of water, then washing in cold water to cleanse and freshen the product, then dropping for a period of from 1 to 3 minutes in a boiling sealing water containing citric acid and 5 pounds of salt, then coating with hot cottonseed or olive oil, and then heating for a period of from 10 to 30 min (depending upon the bulk treated) at a temperature ranging from 212 to 250°F, actually by placing the mushroom at a temperature of about 150°F in a container which is closed and heated to effect the desired sterilizing or processing. While the foregoing treatment has been found to effect the preservation of mushroom without loss of flavour, so that the preserved product may not be distinguished from the fresh it will be varied by omitting certain operations, as washing in cold water and dropping in sealing water containing citric acid and salt and by modifying the degree of the treatment as by changing the time and temperature of the operations, or the mushroom may be sterilized in water or brine directly after being subjected to the evaporating operation. It is important however that the treatment shall not drive off or cause the loss of natural juices of the mushroom, as by the use of high or prolonged heat in effecting the evaporation of the water which is preferably driven off at a temperature between 100 to 150°F.

## **PICKLING & PRESERVATION**

The preservation food in common salt or vinegars is called pickling. Salt, vinegars and lactic acid are the three important ingredients used in pickling. These substances when used in sufficient quantities act as preservatives either singly or collectively. Spices & oil are also used. Pickling is done in two stages namely (a) curing or fermentation in brine, or salting without fermentation and (b) finishing and packing. The conditions for proper maintenance has already been explained earlier.

## **PROCESS FLOW SHEET FOR MUSHROOM**



## SUPPLIERS OF PLANT AND MACHINERY

M/s. A.B. Panchal & Co.,  
13, Ajmeri Udyog Nagar,  
Ahmedabad - 1.

M/s. B. Sen Berry & Co.  
65/11, Rohtak Road,

Karol Bagh,  
New Delhi-110005.  
M/s. Max Flow Pumps Pvt. Ltd.,  
1/1, Maucsca Road,  
Gurgaon.  
M/s. Anchor Hydraulics,  
Khamats Lane,  
By Culla,  
Bombay-27.

### RAW MATERIAL SUPPLIERS

M/s. Baroda Chemical & Fertilizers,  
Makarpura Industrial Estate,  
Baroda-10.  
M/s. Vandana Fertilizers Pesticides,  
New Sabji Mandi,  
Hissar.  
M/s. Govdow Chemical & Pharmaceutical Co.,  
5, Sir, Manakjee Mehta Road,  
Poona-1.  
M/s. Agra Fertilizer Ind.  
Gurki-Mandi, Fatehpur Sikri,  
Agra (U.P).

### CANNER'S EQUIPMENT

M/s. Delhi Industries,  
4, Pahar Ganj,  
New Delhi - 55.  
M/s. Vishan Dass Raj Kumar,  
242, Azad Market,  
New Delhi-6.

### Cans:

M/s. Bottles & Containers Industries,  
Hoechst House, 3/1 Asaf Ali Road,  
New Delhi-2.  
M/s. Mulakh Raj & Co.,  
204, Azad Market,  
New Delhi-6.

### PLANT ECONOMICS

Rated Plant capacity=2.00 TON/Day

### LAND & BUILDING

1.	Land	Rs.	10,00,000.00
2.	Building	Rs.	59,00,000.00
	TOTAL	Rs.	69,20,000.00

## PLANT & MACHINERY

0

1.	Washing tank (SS)(255 x 45 x 60 Cm3)	10 No.	Rs.	80,000.00
2.	Vacuum Drier Cap : 200 Kgs/hr.	3 No.	Rs.	6,00,000.00
3.	Steam Jacketed Kettle Cap: 1000 lts. vol.	4 No.	Rs.	1,00,000.00
4.	Boiler Steam 250 Kgs/hr.	1 No.	Rs.	1,70,000.00
5.	Can seamer (Automatic)Cap: 200 Cans/hr.	4 No.	Rs.	80,000.00
6.	Blender Cap: 100 Kgs/hr.	4 No.	Rs.	80,000.00
7.	Boiling Water bath Cap: 500 lits	3 No.	Rs.	18,000.00
8.	Fruit Puper Cap: 200 Kgs/hr.		Rs.	50,000.00
9.	Autoclave for can sterilisation Cap: 300 Cans/hr.	1 No.	Rs.	80,000.00
10.	P.P. Sealer	2 No.	Rs.	10,000.00
11.	Black Polyethene trays & shelves 100 x 50 x 50 Cm3 (250000)		Rs.	60,00,000.00
12.	Spray gun with motorised pump and Compressor	20 No.	Rs.	60,000.00
13.	Heat Convectors 2 KW	20 No.	Rs.	4,000.00

14.	Device for compressing and levelling the fertilized soil in trays and harvesting m/c	10 No.	Rs.	1,50,000.0
15.	Cooler for air cooling	6 No.	Rs.	30,000.00
16.	Preparation table (S.S) Length (5m x 1m x 1m)	3 No.	Rs.	40,000.00
17.	Weighing scall Weighing capacity. 100-500 Kgs.	3 No.	Rs.	30,000.00
18.	Laboratory testing equipments		Rs.	60,000.00
19.	Air ionizer	20 No.	Rs.	20,000.00
20.	Process control equipments and instrumentation.		Rs.	30,000.00
21.	Conveyor belt, Bocket elevators etc		Rs.	1,00,000.00
22.	Miscellaneous equipments		Rs.	30,000.00
	TOTAL		Rs.	78,22,000.00

## OTHER FIXED ASSETS

1.	Office equipment, furniture plus other equipment & accessories	Rs.	1,00,000.00
2.	Installation, electrification, water and commissining etc.	Rs.	5,00,000.00
3.	Technical Know How	Rs.	1,00,000.00

4.	Preliminary & Pre-operative expenses	Rs.	50,000.00
5.	Miscellaneous	Rs.	25,000.00
	TOTAL	Rs.	7,75,000.00

#### FIXED CAPITAL

1.	LAND & BUILDING	Rs.	69,20,000.00
2.	PLANT & MACHINERY	Rs.	78,22,000.00
3.	OTHER FIXED ASSETS	Rs.	7,75,000.00
	TOTAL	Rs.	1,55,17,000.00

#### WORKING CAPITAL REQUIREMENT/MONTH

##### RAW MATERIALS

1.	Spawn (vegetable mycelium) gray 1 Bottle for 2 trays.	Rs.	3,00,000.00
2.	Compost fertilizer of standard formulation 650 Tons @ Rs. 1000/-MT	Rs.	6,50,000.00
3.	Paddy Straw & Wheat Straw @ Rs. 50/- Quinatal 6600 Quintal	Rs.	3,30,000.00
4.	Carbendazine solution & Benomyl (1 gm/lit Cone) or other pesticide/weedside etc.	Rs.	20,000.00
5.	PVC films/bags to Store harvested mushroom for 7 days. 200 Kgs. @ Rs. 40/-kg.	Rs.	8,000.00
6.	Spices, Oil, Vinegar and other	Rs.	50,000.00
7.	Tin Cans ( 1 lb. capacity) 1,10,000 Nos @ 2/- can.	Rs.	2,20,000.00
	TOTAL	Rs.	15,78,000.00

#### SALARY & WAGES / MONTH

1.	General Manager	1 No.	Rs.	4,000.00
2.	Production Supervisor	4 No.	Rs.	7,200.00
3.	Food Technologist	2 No.	Rs.	6,000.00
4.	Chemist	2 No.	Rs.	4,000.00
5.	Skilled worker	20 No.	Rs.	24,000.00
6.	Semi skilled worker	30 No.	Rs.	30,000.00
7.	Accountant and Typist	3 No.	Rs.	4,800.00
8.	Marketing executive	2 No.	Rs.	4,000.00
9.	Mechanical/Electrical	2 No.	Rs.	2,400.00
10.	Peons/Chowkidar	8 No.	Rs.	8,000.00
	TOTAL		Rs.	94,400.00
	Plus perks @ 20% p.a.		Rs.	18,880.00
	TOTAL		Rs.	1,13,280.00

## UTILITIES AND OVERHEADS

1.	Power Consumption of 7500 Kwatt hrs @ Rs. 2.00 per Kwatt hr.	Rs.	15,000.00
2.	Water Consumption of 2000 KLs @ Rs. 2.00 per KL	Rs.	4,000.00
3.	Administrative expenses	Rs.	10,000.00
4.	Fuel 1500 lits Rs. 5/- lits	Rs.	7,500.00
5.	Transportation and Conveyance	Rs.	5,000.00
6.	Publicity & advertisement	Rs.	10,000.00

7.	Miscellaneous	Rs.	5,000.00
	TOTAL	Rs.	56,500.00

Total load is 41 Kwatts

### TOTAL WORKING CAPITAL/MONTH

1.	RAW MATERIAL	Rs.	15,78,000.00
2.	SALARY & WAGES	Rs.	1,13,280.00
3.	UTILITIES & OVERHEADS	Rs.	56,500.00
	TOTAL	Rs.	17,47,780.00
1.	WORKING CAPITAL FOR 3 MONTHS	Rs.	52,43,340.00
2.	MARGIN MONEY FOR W/C LOAN	Rs.	13,10,835.00

### COST OF PROJECT

TOTAL FIXED CAPITAL	Rs.	1,55,17,000.00
MARGIN MONEY	Rs.	13,10,835.00
TOTAL	Rs.	1,68,27,835.00

### TOTAL CAPITAL INVESTMENT

TOTAL FIXED CAPITAL	Rs.	1,55,17,000.00
TOTAL WORKING CAPITAL FOR 3 MONTHS	Rs.	52,43,340.00
TOTAL	Rs.	2,07,60,340.00

### COST OF PRODUCTION/ANNUM

1.	Working Capital for 1 year	Rs.	2,09,73,360.00
2.	Interest @ 22.00% on T.C.I	Rs.	45,67,274.80
3.	Depreciation @ 6.50% on buildings	Rs.	3,84,800.00
4.	Depreciation @ 25.00% on Plant and Machinery	Rs.	19,55,500.00

5.	Depreciation @ 20.00% on office equipment & furnitures	Rs.	20,000.00
	TOTAL	Rs.	2,79,00,934.80

## TURN OVER/ANNUM

1.	By Sale of 3,78,450 Kgs. of Canned Mushrooms at Rs. 60/- Kgs.	Rs.	2,27,07,000.00
2.	By Sale of Dehydrated Mushroom 39060 Kgs. at Rs. 70/- Kgs.	Rs.	27,34,200.00
3.	By Sale of Mushroom Pickles 182490 Kgs. at Rs. 90/- per kg.	Rs.	1,64,24,100.00
	TOTAL	Rs.	4,18,65,300.00

PROFIT = Rs.1,39,64,365.20

RATE OF RETURN = 67.26 %

B.E.P. = 35.67 %

NIIR Project Consultancy Services (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. Its various services are: Pre-feasibility study, New Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Preparation of Project Profiles and Pre-Investment and Pre-Feasibility Studies, Market Surveys and Studies, Preparation of Techno-Economic Feasibility Reports, Identification and Selection of Plant and Machinery, Manufacturing Process and or Equipment required, General Guidance, Technical and Commercial Counseling for setting up new industrial projects and industry. NPCS also publishes various technology books, directory, databases, detailed project reports, market survey reports on various industries and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by Indian and overseas professionals including project engineers, information services bureau, consultants and consultancy firms as one of the input in their research.

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