INTRODUCTION

Background to Mushroom Cultivation
Importance of Mushroom Cultivation in the Tropics
Mushrooms as a Source of Protein and other Food Nutrients
Medicinal Properties of Mushrooms
The Use of Agricultural Wastes in Mushroom Cultivation
The Labor Intensive Nature of Mushroom Growing and its Employment Potential
Absence of Crop Competition in Mushroom Cultivation
The Requirement for Mushroom Research and Development

BIOLOGY OF THE MUSHROOM

Life Cycle and Classification
Identification of Mushroom
Edible and Poisonous Mushroom
Mushroom Genetics and Breeding
Line Improvement
By Selection
By Hybridization or Crossbreeding
Specific Techniques or Methods in Development New Lines
Selection from Multispore Culture
Simule Mixing
Cross Breeding

FOOD VALUE OF MUSHROOMS

Protein
Vitamins
Minerals
Carbohydrates and Fats
Energy Value of Mushrooms

USES OF MUSHROOMS

CULTIVATION OF WHITE BUTTON MUSHROOM (AGARICUS BISPORUS)

Temperature
Moisture
Ventilation
Good Spawn
Suitable Growing Space
Compost and Methods of Composting
Nature and Quality of the Basic Material
Organic and Inorganic Supplements
Management of the Compost During Composting
A Compost Fermentation Method by Means of Forced Air Circulation
Mechanical Composting
Spawn and Methods of Spawning
Advantages of Grain Spawn
Disadvantages of Grain Spawn
Methods of Preparation of Grain Spawn
Factors Determining the Amount of Spawn Needed
Method of Spawning
Storage of Spawn
Casing
Chemical Sterilisation
Time of Casing
Cropping and Harvesting
Diseases
Soft Mildew or Cobweb (Dactylium Dendroides)
(Papulaspore Byssina)
White Plaster Mould (Scopulariopsis Fumicola)
Olive Green Mould (Chaetomium Olivacearum)
Green Mould (Trichoderma Viride)
Truffle Disease (Pseudobalsamia Microspora)
Bubble Disease (Mycogone Pernicosa)
Dry Bubble, Brown Spot Disease (Verticillium Mathousel or V.Psiallistae)
Bacterial Blotch (Pseudomonas Tolaassii)
Virus Diseases
Insect Pests
Sciariids
Phorids
Spring Tails
Cecid
Mites
Nematodes
Control
Abnormalities of Mushrooms
Open Mushrooms
Preservation
Storage in Fresh Conditions
Controlled Atmosphere
Preservation by Gamma Radiation
Freeze Drying
Steeping Preservation
Dehydration of Mushrooms
Canning of Mushroom
Do's and Don'ts of Mushroom Growing
Mushroom Farm Design
Construction and Insulation
Peak Heating Chamber/ Bulk Chamber/funnel
Initial Consideration/Work Plan
Casing Pasteurization Chamber
Economically Viable Commercial Button Mushroom Unit

CULTIVATION OF AGARICUS BITORQUIS

Harvesting
False Truffle (Diehliomyces Microspora)
Bacterial Blotch and pests
CULTIVATION OF PADDY STRAW MUSHROOM (VOLVARIELLA spp)

Diseases and Pests
Preservation
Canning
Economics of Production of Paddy Straw Mushroom (Information Collected from Seasonal Grower)

CULTIVATION OF PLEUROTUS spp.

Method of Cultivation
Preparation of Spawn
Cultivation
Economics of Pleurotus
Cultivation in Hills on a Small Scale (with Hot Water Treatment)

COMMON EDIBLE MUSHROOMS OF INDIA

Agricus Bisporus (Lange) Sing
Agaricus Campestris L.exFr.
Agrocybe Praecox (Bull. ex st. Amans Fayod)
Amanita Caesaria (Scop. ex.fr) Pres. ex Schw
Amanita Vaginata (Bull.exFr) Vitt.
Armillaria Mellea
Bovista Plumbea Pers
Calvatia Cyathiformis (Bose) Morg
Calvatia Utriformis (Bull. ex Pers) Toap
Cantharellus Cibarius Fr.
Coprinus Atramentarius (Bull ex Fr.) Fr.
Coprinus (Mill ex Fr.) S.F.Gray
Coprinus micaceus (Bull.ex Fr.) Fr.
Flammulina Velutipes (Curt.ex Fr.) Karst.
Heterobasidion Annosum (Fr.) Br.
Himeola Auricular Judad (Bull.pet St. Amans) Berk
Hydnum Sepandum L.ex.FR.
Laccaria Laccata (Scop ex Fr.) Cook
Lactiporus Sulphureus (Bull. ex Fr.) Muff
Leucocoprinus Cepaestipes (Sow.ex Fr.) Patouillard
Lycoperdon Perlatum Pers
Lycoperdon Pyriformin Pers.
Macroiepiota Mostoidea (Fr.) Singer
Macrolepiota Procera (Scop. ex Fr.) Sing
Macrolepiota Procera (Scop. ex Fr.) Singer
Morchella Deliciosa Fr.
Morchella Esculenta ex St. Amans.
Pleurotus Flablellatus (Berk and Br.) Sacc.
Pleurotus Ostreatus (Jacquin ex. Fr.) Kummer
Pleurotus Sajor Caju (Fr.) Singer
Podabrella Microcarpa
Psathyrella Hydrophilum (Bull.ex Merat)
Rigidoporus (Sow or Fr.) Imaz.
Russula Emetica (Schaeff ex.Fr.) S.F.Gray
Russula Lipida Fr.

DELICIOUS RECIPES OF MUSHROOM

Stuffed Potatoes
Mushrooms on Toast
Mushroom Soup
Mushroom Pakoras
Mushroom Pulao
Mushroom Pickle
Mushroom Pickle
Mushrooms and Peas
Variation
Mushrooms and Paneer
Mushroom Samosa
Liver with Mushroom

LABORATORY ASPECTS (PURE CULTURE AND SPAWN PREPARATION)

Loyout and Equipment of a Mushroom Laboratory
Culture Media Preparaton (Plate 1)
Procedure
Serilization
How to use a Pressure Cooker (Sterilization by Pressure)
How to use a Steamer
Slanting the Bottles and/or Pouring on Petri Dishes
Culture of the Fungus
Preparation of Materials
Inoculation in a Sterile Room
Tissue Culture (Plate 2)
Subcultures from other Laboratories
Propagation or Multiplication
Detection of Mutation or Degeneration
Preservation and Storage of Mycelium (Plate 3)
Simple Laboratory Facilities
Cryogenic Containers
Spawn Preparation (Plate 4)
Spawn Substrates
Preparation of Mother Spawn
Preparation of the Substrate
Inoculation of Mother Spawn Substrate with Agar Plugs
Incubation
Preparation of the Planting Spawn (Plate 5)
Used Tea Leaves
Ipil Ipil Leaves and Sawdust
Cotton Waste
Rice Straw
Lotus Seed Shells and Manure
Maintenance of Spawn Quality
Spawn Quantities
Quality Control Procedures for Spawn Handling by Growers
Notes on Commercial Spawn Preparation

ENVIRONMENTAL FACTORS CONDITIONING MUSHROOM GROWTH

Light
Temperature
Water Relations
Carbon Dioxide

PICKING, GRADING AND PACKING

Partial Hints (Based on Many Years Back)

INSECTS AND PESTS

Flies
Sciarid Files
Phorid Flies
Cecid Flies
Mites
Springtails
Nematodes (eetworms)

CULTIVATION OF OYSTER MUSHROOM

Substrates Preparation
Filling and Spawning
Cropping and Management
Precautions

CULTIVATION OF PADDY STRAW MUSHROOM

Open Air Cultivation
Fruiting and Harvesting
Indoor Cultivation
Substrate
Mushroom House
Composting Phase 1 (Outdoor)
Phase II (Indoor Composting)
Spawning and Cropping
Harvesting
Yield

MUSHROOM PRESERVATION AND PROCESSING

Short-Term Storage
Long Term Storage
Canning
Drying

REQUIREMENTS OF A PROJECT ON MUSHROOM FOR EXPORT
Land
Mushroom House
Composting Unit
Cannery
Water Supply System
Power Supply
Miscellaneous Facilities
Plant and Machinery
Office Equipments
Raw Materials
Skilled Manpower
Source of Technology
Estimated Cost
Project Yield
Sale Price
Projected Benefit
Marketing Strategy
Fresh Mushroom
Financial Analysis
Financial Assistance
Margin Money
Cost of Land
Interest Rate
Scale Relinance
Security
Repayment
Major Exporters of Canned Button Mushroom
Major Importers of Canned Button Mushroom
Production Technology
Spawn Production/Procurement
Compost Preparation
Spawning and Spawn Running
Casing
Fructification
Environment Control
Pest and Disease Control
Harvesting, Grading and Storage
Mechanisation
Computer, Control
Yield
Processing Technology
Project Cost
Plant and Machinery
Working Capital Requirement
Summary of Recurring Expenditure (At Full Capacity)
Cost of Raw Materials and packaging at Full Capacity
Estimated Cost of Electricity/Fuel Consumption
Projected Production and Sales
Financial Rate of Return
Flow Chart for Canning Button Mushroom
Cleaning and Washing
Sources of Spawn
MARKETING OF MUSHROOMS

Marketing Channels
Time of Sale
Grading
Packing
Transportation
Marketing cost and Margins
Processing of Mushrooms
Economics of Pickling

PLANT ECONOMICS OF MUSHROOMS

Plant & Machinery
Fixed Capital
Raw Materials
Total Working Capital/Month
Turn Oven/Annum

PLANT ECONOMICS OF MUSHROOMS & PROCESSED FOOD

Plant & Machinery
Fixed Capital
Raw Materials
Total Working Capital/Month
Turn Oven/Annum

PLANT ECONOMICS OF OYSTER MUSHROOMS

Plant & Machinery
Fixed Capital
Raw Materials
Total Working Capital/Month
Turn Oven/Annum

PLANT ECONOMICS OF MUSHROOMS GROWING & PROCESSING BY - DEEP FREEZING METHOD

Plant & Machinery
Fixed Capital
Raw Materials
Total Working Capital/Month
Turn Oven/Annum

PLANT ECONOMICS OF MUSHROOMS CULTIVATION AND PROCESSING UNIT

Plant & Machinery
Fixed Capital
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