

Handbook on Mushroom Cultivation and Processing (with Dehydration, Preservation and Canning)

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About the Book

Mushrooms are the health food of the world. These are that fast growing basidiomycetous fungi which produce fleshy fruit bodies. They are rich in proteins, vitamins and minerals, so they are consumed as energy rich food. Mushroom has been attracting attention of mankind since ancient times and use of mushroom, as food is as old as human civilization. Mushrooms are superior to many vegetables and beans in their nutritive value. It is very rich in protein, vitamins and minerals. Fresh mushrooms contain about 85% water and 3.2% protein. But dried mushrooms water content is low and protein level is high as 34 to 44% and the fat content is less than 0.3%. There are about 100 species of edible mushrooms all over the world. But only three of them are cultivated in India which are *Agaricus bisporus*, *Volvariella volvacea* and *pleurotus sajor caju*. Unfortunately, it is realized that mushrooms did not receive universal acceptance over the years since a number of naturally growing mushrooms are poisonous. Now the situation has been changed because the cultivated edible mushrooms are totally safe for human consumption. Mushroom cultivation fits in very well with sustainable farming and has several advantages: it uses agricultural waste products, a high production per surface area can be obtained, after picking; the spent substrate is still a good soil conditioner. They have less carbohydrate so they are believed to be suitable for diabetic patients. Fresh mushrooms have very limited life and hence they need to be consumed within few hours. But processing and canning increases their shelf life to few months. Osmotic dehydration is one of the important methods of processing mushroom which involves drying technology of mushroom. Mushrooms are very popular in most of the developed countries and they are becoming popular in many developing countries like India. Applications and market for mushrooms is growing rapidly in India because of their nice aroma, nutritious values, subtle flavour and many special tastes. Mushroom cultivation has been declared as a major thrust area by Government of India. Mushroom dish is a common item in all the big hotels. Mushroom production has increased many folds during the recent past. Mushrooms have found a definite place in the food consumption habits of common masses and there is a constant demand for it throughout the year.

Some of the fundamentals of the book are nutritive value of edible mushrooms, medicinal value of mushrooms, advantages of mushrooms, symptoms of mushroom poisoning, morphology of common edible mushrooms, classification of fungi a brief survey, chemical composition, anti nutritional factors and shelf life of oyster mushroom, osmotic dehydration characteristics of button mushrooms, mushroom cultivation, cultivation of white button mushroom (*agaricus bisporus*), factors determining the amount of spawn needed, fungicides for mushroom diseases insecticides for mushroom pests etc.

The present book contains cultivation, processing, dehydration, preservation and canning of various species of mushrooms. It is resourceful book for agriculturists, researchers, agriculture universities, consultants etc.

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Common Morel

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(Batsch ex Fr.) Fr.
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Omphalotus Olearius
(DC. ex Fr.) Sing.
Gomphidius Roseus
(Fr.) P. Karst.
Gomphidius Glutinosus
(Schaeff. ex Fr.) Fr.
Chroogomphus Rutilus
(Schaeff. ex Fr.) O.K. Miller
Ivory Wax Cap
Hygrophorus eburneus (Bull. ex Fr.) Fr.
Goat Moth Wax Cap
Hygrophorus Cossus (Sow. ex Fr.) Fr.
Pinewood Wax Cap
Hygrophorus Hypothejus (Fr.) Fr.
Hygrophorus marzuolus
(Fr.) Bres.
Camarophyllus Pratensis
(Pers. ex Fr.) Kumm.
Hygrocybe nigrescens
(Quel.) Kuhner
Hygrocybe punicea
(Fr.) Kumm.



Omphalina epichysium
 (Pres. ex Fr.) Quel.
 Gerronema chrysophyllum
 (Fr.) Sing.
 Laccaria amethystina
 (Huds. ex Hook) Cooke
 Laccaria laccata
 (Scop. ex Fr.) Cooke
 Clitocybe odora
 (Bull. ex Fr.) Kumm.
 Clitocybe clavipes
 (Pers. ex Fr.) Kumm.
 Clitocybe geotropa
 (Bull. ex St. Amans) Quel.
 Clitocybe maxima
 (F. Wett. ex Fr.) Kumm.
 Common Funnel Cap
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 Clitocybe cerussata
 (Fr.) Kumm.
 Clitocybe candicans
 (Pers. ex Fr.) Kumm.
 Clitocybe brumalis
 (Fr. ex Fr.) Kumm.
 Lepista nebularis
 (Batsch ex Fr.) Harmaja
 Wood Blewitt, Blulette, Blue Leg
 Lepista nuda (Bull. ex Fr.) W. G. Smith
 Blewitt, Blulette, Blue Leg
 Lepista saeva (Fr.) P. D. Orton
 Tricholomopsis rutilans
 (Schaeff. ex Fr.) Sing.
 Tricholoma caligatum
 (Viv.) Ricken
 Tricholoma colossus
 (Fr.) Quel.
 Tricholoma Fulvum
 (DC. ex Fr.) Sacc.
 Tricholoma Vaccinum
 (Pers. ex Fr.) Kumm.
 Tricholoma Portentosum
 (Fr.) Quel.
 Tricholoma flavovirens
 (Pers. ex Fr.) Lund.
 Tricholoma sejunctum
 (Sow. ex Fr.) Quel.
 Sulphurous Tricholoma
 Tricholoma Sulphureum (Bull. ex Fr.) Kumm.
 Tricholoma Columbeta
 (Fr.) Kumm.
 Tricholoma Terreum



(Schaeff. ex Fr.) Kumm.
 Honey Fungus, Honey Agaric, Shoestring Mushroom
Armillaria mellea (Vahl. ex Fr.) Kumm.
Lyophyllum connatum
 (Schum. ex Fr.) Sing
Lyophyllum fumosum
 (Pers. ex Fr.) Orton
Tephrocybe atrata
 (Fr. ex Fr.) Donk
 St. George's Mushroom
Calocybe gambosa (Fr.) Donk
 Giant Clitocybe
Leucopaxillus giganteus (Sibth. ex Fr.) Sing.
Melanoleuca brevipes
 (Bull. ex Fr.) Pat.
Catathelasma imperiale
 (Fr.) Sing.
 Wood Woolly-foot
Collybia Peronata (Bolt. ex Fr.) Kumm.
 Russet Shank
Collybia Dryophila (Bull. ex Fr.) Quel.
 Greasy Tough Shank
Collybia butyracea (Bull. ex Fr.) Quel.
 Spotted Tough Shank
Collybia maculata (Alb. et Schw. ex Fr.) Kumm.
Hohenbuehelia Petaloides
 (Bull. ex Fr.) Schulz.
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 (Pers. ex Fr.) Kotl. et Pouz.
 Slimy Beech Tuft
Oudemansiella mucida (Schrad ex Fr.) Hoehn.
 Rooting Shank
Oudemansiella radicata (Relhan ex Fr.) Sing.
Strobilurus Esculentus
 (Wulf. ex Fr.) Sing.
 Little Wheel Toadstool
Marasmius rotula (Scop. ex Fr.) Fr.
Marasmius scorodoni (Fr.) Fr.
 Fairy Ring Fungus, Fairy Ring Champignon, Scotch Bonnet
Marasmius oreades (Bolt. ex Fr.) Fr.
 Lilac *Mycena*
Mycena pura (Pers. ex Fr.) Kumm.
Mycena rosea
 (Bull.) ex Sacc. et Dalla Costa
Mycena fagetorum
 (Fr.) Gill.
Xeromphalina campanella
 (Batsch ex Fr.) R. Maire
 Velvet Shank, Winter Fungus
Flammulina velutipes (Curt. ex Fr.) Sing.
 The Miller



Clitopilus prunulus (Scop. ex Fr.) Kumm.
 Nolanea verna
 (Lundell) Kotl. et Pouz.
 Livid Entoloma
 Entoloma lividum (Bull. ex St. Amans) Quel.
 Entoloma nidorosum
 (Fr.) Quel.
 Entoloma hirtipes
 (Schum. ex Fr.) Moser
 Volvariella speciosa
 (Fr.) Sing.
 Pluteus cervinus
 (Schaeff. ex Fr.) Kumm.
 Grisette
 Amanita vaginata (Bull. ex Fr.) Vitt
 Amanita umbrinolutea Secr.
 Fly Agaric
 Amanita muscaria (L. ex Fr.) Hook
 Amanita regalis
 (Fr.) Michael
 Caesarâ€™s Mushroom, Imperial Mushroom
 Amanita caesarea (Scop. ex Fr.) Grev.
 Panther Cap
 Amanita pantherina (DC. ex Fr.) Krombh.
 Amanita gemmata
 (Fr.) Gill.
 Death Cap
 Amanita phalloides (Fr.) Link
 Destroying Angel
 Amanita virosa (Fr.) Bertillon
 False Death Cap
 Amanita citrina (Schaeff) ex Roques
 Amanita porphyrea
 (Alb. et Schw. ex Fr.) Schummel
 Amanita spissa (Fr.) Opiz
 Blusher
 Amanita rubescens (Pers. ex Fr.) S. F. Gray
 Agaricus brunnescens Peck
 Red-staining Agaric Wood Mushroom
 Agaricus silvaticus (Schaeff. ex Krombh) Kumm.
 Common Field Agaric, Meadow Mushroom
 Agaricus campestris L. ex Fr.
 Agaricus augustus Fr.
 Agaricus abruptibulbus Peck
 Horse Agaric, Horse Mushroom
 Agaricus arvensis Schaeff. ex Fr.
 Yellow Stainer
 Agaricus xanthoderma Genev.
 Lepiota cristata
 (Alb. et Schw. ex Fr.) Kumm.
 Lepiota clypeolaria



(Bull. ex Fr.) Kumm.
 Parasol Mushroom
 Macrolepiota procera (Scop ex Fr.) Sing.
 Shaggy Parasol
 Macrolepiota rhacodes (Vitt.) Sing
 Macrolepiota excoriata
 (Schaeff. ex Fr.) Acker-Sch.
 Cystoderma amianthinum
 (Scop. ex Fr.) Maubl
 Cystoderma cinnabarinum
 (Alb. et Schw. ex Fr.) Maubl
 Shaggy Mane, Shaggy Cap, Lawyer's Wig
 Coprinus Comatus (Mull. ex Fr.) S. F. Gray
 Common Ink Cap
 Coprinus atramentarius (Bull. ex Fr.) Fr.
 Glistening Ink Cap
 Coprinus micaceus (Bull. ex Fr.) Fr.
 Panaeolus papilionaceus
 (Bull ex Fr.) Quel.
 Psathyrella candolleana
 (Fr. ex Fr.) R. Maire
 Psathyrella velutina
 (Pers. ex S. F. Gray) Sing.
 Yellow Cow-pat Toadstool
 Bolbitius vitellinus (Pers. ex Fr.) Fr.
 Agrocybe dura
 (Bolt. ex Fr.) Sing.
 Agrocybe praecox
 (Pers. ex Fr.) Sing.
 Stropharia rugosoannulata
 Farlow in Murrill
 Verdigris Agaric
 Stropharia aeruginosa (Curt. ex Fr.) Quel.
 Stropharia albonitens
 (Fr.) P. Karst.
 Brick Red Hypholoma, Bricktop, Bricktop Mushroom
 Hypholoma sublateritium (Fr.) Quel.
 Sulphur Tuft
 Hypholoma fasciculare (Huds. ex Fr.) Kumm.
 Hypholoma capnoides
 (Fr. ex Fr.) Kumm.
 Psilocybe semilanceata
 (Fr. ex Weinm) Kumm.
 Pholiota destruens
 (Brond) Gill.
 Shaggy Pholiota
 Pholiota squarrosa (Pers. ex Fr.) Kumm.
 Pholiota carbonaria
 (Fr.) Sing.

 Gymnopilus spectabilis



(Fr.) Sing
 Gymnopilus sapineus
 (Fr.) R. Maire
 Kuehneromyces mutabilis
 (Schaeff. ex Fr.) Sing. et Smith
 Tubaria conspersa
 (Pers. ex Fr.) Fayod
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 (Pers. ex Fr.) Kumm.
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 Inocybe fastigiata
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 Inocybe argillacea
 (Pers. ex Pers.) Sing.
 Inocybe lacera
 (Fr.) Kumm.
 Hebeloma radicosum
 (Bull. ex Fr.) Ricken
 Jewâ€™s Ear, Judasâ€™ Ear
 Hirneola auricula-judae (Bull. ex St. Amans) Berk.
 Yellow Brain Fungus, Witches Butter
 Tremella mesenterica Retz. ex Hook.
 Yellow Chanterelle Pixie Stool
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 Bull. ex Fr.
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 Lentinus Lepideus
 (Fr. ex Fr.) Fr.

25. GLOSSARY OF BASIC MYCOLOGICAL TERMS

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