

SEC0106503:Mushroom Cultivation Technology

Course Title: Mushroom Cultivation Technology

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Credits: 3

Learning objectives:

- ❖ Understand the basics of mushroom by enabling students to identify edible and poisonous mushrooms
- ❖ Develop interest in mushroom cultivation
- ❖ Provide hands on training for the preparation of spawn and mushroom bed for mushroom cultivation
- ❖ Learn various post-harvest technology associated to mushroom cultivation
- ❖ Identify and manage Insect-Pests affecting mushroom
- ❖ Help the students to learn a means of self-employment and income generation

Learning outcomes:

On successful completion of the course, students will be able to:

- ❖ Identify edible and poisonous mushrooms
- ❖ Gain the knowledge of cultivation of edible mushrooms and spawn production; and various post-harvest technology associated to mushroom cultivation
- ❖ Manage various diseases and pests of mushrooms
- ❖ Learn the way of self-employment and income generation

THEORY

Unit 1: Introduction to mushrooms

Mushrooms - taxonomic rank. Different parts of typical mushroom; structure and texture of fruitbodies - Gilled fungi and pore fungi; Life cycle of mushrooms; various habitats of mushrooms - Lignicolous, Humicolous and Coprophilous; Symbiotic associations - Mycorrhiza.

Unit 2: Cultivation of Mushrooms

History, scope, and opportunities of mushroom cultivation. Problem in cultivation - diseases, pests, and nematodes and their management strategies.

Unit 3: Health benefits of mushrooms

Historical uses of mushrooms; Nutrient profile of mushrooms - Amino acids, Protein, Carbohydrates, fats, minerals, and vitamins; Therapeutic aspects - antioxidant, antimicrobial, antidiabetic, anticancer effect; stimulating vitamin D production in mushrooms.

Unit 4: Common edible and poisonous mushrooms

Edible Mushrooms - Oyster mushroom (*Pleurotus ostreatus*), paddy straw mushroom (*Volvariella volvacea*), Button mushroom (*Agaricus bisporus*); Poisonous mushroom – False parasol or green-spored parasol (*Chlorophyllum molybdites*).

Unit 5: Principles of mushroom cultivation

Structure and construction of mushroom house; Spawn production - culture media preparation, isolation of pure culture, mother spawn, multiplication of spawn; Sterilization of substrates. Composting techniques, mushroom bed preparation; Spawning, spawn running, harvesting. Cultivation of oyster mushroom.

Unit 6: Post harvest technology

Preservation of mushrooms - freezing, drying, and packaging, quality assurance, shelf life, market opportunities. Value added products of mushrooms.

PRACTICAL

1. Preparation of media for mushroom culture
2. Preparation of pure culture
3. Production of spawn
4. Cultivation of oyster mushroom using paddy straw/lignocellulosic wastes.
5. Estimation of antioxidant properties (Reducing power, Total antioxidant capacity) and phytochemical content (phenol, flavonoid, lycopene, β -carotene) of mushroom

Suggested Readings

1. Purkayastha RP, Chandra A (1985) Manual of Indian edible Mushrooms. Today and Tomorrows Printers and Publishers, New Delhi.
2. Pathak VN, Yadav N (1998) Mushroom Production and Processing Technology. Agrobios, Jodhpur.
3. Tripathi DP (2005) Mushroom Cultivation. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Pandey RK, Ghosh SK (1996) A Hand Book on Mushroom Cultivation. Emkey Publications.
5. Hait G (2023) Introductory Botany (Biofertilizer and Organic Farming, Herbal technology, Mushroom Culture Technology). Vol - I, Global Net Publication, New Delhi.
6. Pathak VN, Yadav N, Gaur M (2000) Mushroom Production and Processing Technology. Vedams Ebooks Pvt. Ltd., New Delhi.
