Course Curriculum

Certificate Programme

on

MUSHROOM CULTIVATION TECHNOLOGY

Estd: 1981

MAR THOMA COLLEGE

LET YOUR LIGHT SHINE

CHUNGATHARA, MALAPPURAM- 679 334

Introduction

Mushrooms have been valued throughout the world as both food and medicine for thousands of years. They are a rich source of nutrition and form a major chunk of health foods. Fats occur in mushrooms in minor amounts, especially compared with protein and carbohydrates, and the fatty fraction consists predominantly of unsaturated fatty acids such as linoleic acid, they may be the perfect food for maintaining a healthy heart and cardiovascular system. Earlier Mushroom eating was restricted to specific regions and areas of the world but due to globalization, interaction between different cultures, growing consumerism has ensured the accessibility of Mushrooms in all areas. Mushrooms are increasingly gaining acceptance in different Cusines and in everday consumption. They have created a space in a common man's kitchen. Also, current trend of consumption conveys the opportunity that lies in the area of mushroom exports.

The two most commonly grown species of mushroom in India are white Button mushroom and Oyster mushroom. Most of the production of white button mushroom in our country is seasonal. The cultivation is done using conventional methods. Usually, unpasteurized compost is used, hence yields are very low. However, in recent years, yield of mushroom has increased as a result of introduction of improved agronomic practices. Cultivation of the common white button mushroom requires technical skill. Apart from other factors, the system requires humidity, two different temperatures i.e. Temperature for spawn or vegetative growth (Spawn Run): 22-28^{0}C, for reproductive Phase (fruit body formation): 15-18^0, Humidity: 85-95% and enough ventilation during substrates that are sterilized are easily contaminated unless spawned under very aseptic conditions. Therefore steaming at 100^0 C (pasteurization) is more acceptable.

Pleurotus is the scientific name for Oyster mushroom. In many parts of India, it is known as Dhingri. This mushroom includes many species e.g. Pleurotus ostreatus, P. sajor-caju, P. florida, P. sapidus, P. flabellatus, P.eryngii and many other edible species. Mushroom growing is an occupation requiring perseverance, patience, intelligent observation and a skill that can be developed only through intelligent experience.

Pleurotus mushroom requires a temperature of 20oC to 30oC, both for its vegetative growth (spawn run) and reproductive phase, i.e. for formation of fruit bodies. The suitable cultivation period at high altitude - 1100-1500 meters above mean sea level is March to October, mid altitude - 600-1100 meters above mean sea level is February to May & September to November and at Low altitude - Below 600 meters above mean sea level is October to March.

Objectives

The course will provide an adequate hands on experience for the students towards an independent handling and culture capability of all edible mushrooms. Subject content is designed and hence the students can avail to become an entrepreneur himself/herself.

Eligibility for the Course

Candidates for admission to Certificate course in Mushroom Culture could posses a

Higher Secondary School Education in Science subjects with Biology

Duration of the Course

Thirty Hours Certificate course in Mushroom Culture course non-semester

Evaluation Scheme

Assignment – 5 marks

Practical - 20 Marks

Theory - 25 mark

Total - 50 Marks

All the theory papers are of 1hours duration each for maximum of 25 marks with passing minimum of 35

marks Practical examinations are also for 3 hours' duration for a maximum of 100 marks and passing minimum of 10 (40%) marks.

Question Paper Pattern

Maximum marks: 25 Time: 1 hours

Part A (5 x 1 = 5)

Five objective questions (One question from each unit)

Part B (5 x 2 = 10)

Paragraph questions (Total questions 7, out of which answers are to be given for any five questions

Part C (2x 5 = 10)

Total questions 3, out of which answers are to be given for any Two questions

PAPER I: MUSHROOM CLASSIFICATION & ECONOMIC IMPORTANCE

Unit: I Mushroom morphology: (1hr)

Different parts of a typical mushroom & variations in mushroom morphology. Key to differentiate Edible from Poisonous mushrooms.

Unit: II Mushroom Classification: (2Hrs)

Based on occurrence- *Epigenous & Hypogenous*, Natural Habitats- *Humicolous, Lignicolous & Coprophilous,* Color of spores- *white, yellow,pink, purple brown & black,* Morphology- *fruiting layers exposed to air, fruiting layers not exposed to air, plants with predominantly pitted cap, cap saddled shape & saucer shape,* Structure and texture of fruit bodies-*gilled fungal& pore fungal.*

Unit: III Biology of Mushrooms: (2hrs)

Button, Straw& Oyster- General morphology, distinguishing characteristics, spore, germination and life cycle.

Unit: IV Nutrient Profile of Mushroom: (1hr)

Protein, aminoacids, calorific values, carbohydrates, fats, vitamins & minerals.

Unit: V Health benefits of Mushroom: (Assignment)

Antiviral value, antibacterial effect, antifungal effect, anti-tumour effect, haematological value cardiovascular & renal effect, in therapeutic diets, adolescence, for aged persons & diabetes mellitus.

PAPER II: CULTIVATION TECHNOLOGY

Unit: I Cultivation System & Farm design:

Fundamentals of cultivation system- small village unit & larger commercial unit.

Principles of mushroom farm layout- location of building plot, design of farm, bulk chamber,

composting platform, equipments & facilities, pasteurization room & growing rooms.

Unit: II Compost & Composting:

Principles of composting, machinery required for compost making, materials for compost preparation.

Methods of Composting- Long method of composting (LMC) & Short method of composting (SMC).

Unit: III Spawn & Spawning:

Facilities required for spawn preparation, Preparation of spawn substrate, preparation of pure culture, media used in raising pure culture, culture maintenance, storage of spawn.

Unit: IV Casting materials & Case running:

Importance of casing mixture, Quality parameters of casing soil, different types of casing mixtures, commonly used materials.

Unit: V Cultivation of Button, Oyster and Straw Mushrooms:

Collection of raw materials, compost & composting, spawn & spawning, casing & case run, cropping & crop management, picking & packing.

Unit: VI Mushroom recipes:

Mushroom Soup, Mushroom Biriyani, Mushroom cutlet,

Mushroom manjoorian, Mushroom omelette, Mushroom bhaji etc.

Field Visit:

1. Visit to relevant Labs/Field Visits