



MUSHROOM CULTIVATIONS; SUSTAINABLE AGRICULTURE FOR RURAL LIVELIHOOD AND IT'S CHALLENGES

Dr.Vilas Balajirao Ganipurkar
L.B.D.G. College, Umri Tq. Umri Dist. Nanded.

Abstract

Mushroom cultivation has great scope in India and in some of other developing countries because of the cheap and easily available raw materials needed for this activity, coupled with faster means of communication and marketing. Mushroom cultivation can directly improve livelihoods through economic, nutritional and medicinal contributions. Mushroom cultivation is highly combinable with a variety of other traditional agricultural and domestic activities, and can make a particularly important contribution to the livelihoods of the disabled, of women and the landless poor who, with appropriate training and access to inputs, can increase their independence and self-esteem through income generation. Mushrooms have not often been actively promoted in the past by agricultural ministries of developing countries. Various reasons have been cited for this neglect, several studies have been conducted on Mushroom cultivation for rural livelihood and it's challenges of cultivation.

Keywords: self-esteem, diversification, Dhingri, Button Mushroom.

Introduction

The mushroom cultivation has grown up in almost all the parts of the world and during last decades, the world mushroom production achieved the growth rate of about 10%. Globally, china is the leading producer of mushrooms with more than 70% of the total global production which is attributed to community based farming as well as diversification of mushrooms. In India, owing to varied agro-climate and abundance of farm waste, different types of temperate, tropical and

sub-tropical mushrooms are cultivated throughout the country. It is estimated that India is generating 600 million MT of agricultural waste besides, fruit and vegetable residue, coir dust, husk, dried leaves, coffee husk, which has potential to be recycled as substrate for mushroom cultivation leading to nutritious food as well as organic manure for crops. Mushroom cultivation has great scope in India and in some of other developing countries because of the cheap and easily available raw materials needed for this activity, coupled with faster means of communication and marketing (as a fresh commodity), and better purchasing power of the people.

Mushroom cultivation can directly improve livelihoods through economic, nutritional and medicinal contributions. However, it is essential to note that some mushrooms are poisonous and may even be lethal, thus the need for extra caution in identifying those species that can be consumed as food. Commercial cultivation in India has started only recently. Growing mushroom under controlled condition is of recent origin. Its popularity is growing and it has become a business which is export-oriented. Today mushroom cultivation has been taken up in states like Uttar Pradesh, Haryana, Rajasthan, etc. (during winter months) while earlier it was confined to Himachal Pradesh, J&K and Hilly areas. Mushroom is an excellent source of protein, vitamins, minerals, folic acid and is a good source of iron for anaemic patient. Mushrooms are of different types:

- a) Button Mushroom
- b) Dhingri (Oyster)
- c) Paddy Straw Mushroom

Of all the types, button mushroom is the most popular one. Mushroom cultivation can be done

at cottage and small-scale levels besides large-scale farming.

Nutritional value:

Mushrooms both add flavour to bland staple foods and are a valuable food in their own right: they are often considered to provide a fair substitute for meat, with at least a comparable nutritional value to many vegetables. The consumption of mushrooms can make a valuable addition to the often unbalanced diets of people in developing countries. Fresh mushrooms have a high water content, around 90 percent, so drying them is an effective way to both prolong their shelf-life and preserve their flavour and nutrients. Mushrooms are a good source of vitamin B, C and D, including niacin, riboflavin, thiamine, and foliate, and various minerals including potassium, phosphorus, calcium, magnesium, iron and copper. They provide carbohydrates, but are low in fat and fibre, and contain no starch. Furthermore, edible mushrooms are an excellent source of high quality protein, and white button mushrooms contain more protein than kidney beans. In addition to all the essential amino acids, some mushrooms have medicinal benefits of certain polysaccharides, which are known to boost the immune system.

Medicinal value:

Recently, there has been a spectacular growth in, and commercial activity associated with, dietary supplements, functional foods and other products that are 'more than just food'. Medicinal fungi have routinely been used in traditional Chinese medicine. Today, an estimated six percent of edible mushrooms are known to have medicinal properties and can be found in health tonics, tinctures, teas, soups and herbal formulas. *Lentinula edodes* (shiitake) and *Volvarella volvacea* (Chinese oyster mushroom) are edible fungi with medicinal properties widely diffused and cultivated. The medicinal properties of mushrooms depend on several bioactive compounds and their bioactivity depends on how mushrooms are prepared and eaten. Shiitake are said to have anti-tumour and antiviral properties and remove serum cholesterol from the blood stream. Other species, such as *Pleurotus* (oyster), *Auricularia* (mu-er), *Flammulina* (enokitake), *Terrella* (yin-er) and

Grifola (maitake), all have varying degrees of immune system boosting, lipid lowering, anti-tumour, micro-biologic and viral properties, blood pressure regulating, and other therapeutic effects. Mushrooms represent a vast source of yet undiscovered potent pharmaceutical products and their biochemistry would merit further investigation.

Income benefits:

Mushroom cultivation activities can play an important role in supporting the local economy by contributing to subsistence food security, nutrition, and medicine; generating additional employment and income through local, regional and national trade; and offering opportunities for processing enterprises (such as pickling and drying)

Livelihood opportunities:

Mushrooms can make a valuable dietary addition through protein and various micronutrients and, coupled with their medicinal properties, mushroom cultivation can represent a valuable small-scale enterprise option. Mushrooms can be successfully grown without access to land, and can provide a regular income throughout the year. Growing mushrooms also helps avoid some of the challenges facing collectors of wild fungi, including species identification, obtaining access and permits for collecting, and practicing sustainable harvest. Cultivation is also independent of weather, and can recycle agricultural by-products as composted substrate which, in turn, can be used as organic mulch in growing other horticultural crops, including vegetables. Mushroom cultivation is highly combinable with a variety of other traditional agricultural and domestic activities, and can make a particularly important contribution to the livelihoods of the disabled, of women and the landless poor who, with appropriate training and access to inputs, can increase their independence and self-esteem through income generation. However, any interventions to promote livelihood activities should be carefully planned, and it is important at the outset to agree with potential mushroom growers: cultivation objectives and the skills, assets and resources available, as well as to identify what market opportunities exist, should they wish to trade their harvested crop. Successful mushroom cultivation for trade requires a good level of individual or collective

organization, and although mushroom cultivation can be a viable small-scale business, any investment in a growing scheme can be risky. Cooperatives and community groups can collaborate in set-up and production costs, harvesting and marketing. Working in joint ventures or partnerships with regional agro industries, universities or wholesalers can help reduce vulnerability and risk for small-scale producers, and provide access to training and other forms of support.

Rural cultivation Challenges:

Establishing larger scale mushroom cultivation systems can be more labour and management intensive. All production systems, to some extent, are vulnerable to sporadic yields, invasions of 'weed' fungi, insect pests, and unreliable market prices for traded goods. Moving from cultivating mushrooms for subsistence use to commercial production and marketing can be quite challenging to local growers. One of the most important aspects of growing mushrooms for commercial purposes is the ability to maintain a continuous supply for chosen market outlets, and if the mushroom enterprise is one of many livelihood activities, producers need to become multi-skilled to manage several enterprises successfully. The initial challenges which mushroom growers have to face include determining the most suitable mushroom to grow and identifying a spawn supplier, organizing available resources to develop a growing system, and assessing requirements for supplying different marketing outlets. In spite of these, starting with home production is an advisable approach. Some mushrooms have been given bad press because of poisonings, which fortunately are generally rare and have been associated with events, including: young children collecting indiscriminately and eating raw mushrooms; immigrants arriving in a new country and incorrectly identifying a local species that turns out to be poisonous; food shortages and economic hardship forcing people to hunt for food; and different physiological responses to an 'edible' fungus. Other health risks can include allergies to different mushroom spores. Mushrooms have not often been actively

promoted in the past by agricultural ministries of developing countries. Various reasons have been cited for this neglect, including: a lack of technical capacity in production techniques with poorly equipped government supported advisory services resulting in interested farmers having to seek technology on their own; comparatively few studies on tropical mushrooms; and a lack of technical skills to produce spawn with suitable strains often hard to find.

References:

- Anonymous (2011) Vision 2030. Directorate of Mushroom Research (ICAR), Solan (H.P.), India, 25pp
- APEDA Reports (2007&2011),
- Bahl Neeta. 1984. Handbook on mushrooms. Oxford and IBH Publishing Co., New Delhi. 123 p.
- Beelman R. B. and D. J. Royse. 2006. Selenium enrichment of *Pleurotus cornucopiae* (Paulet) Rolland and *Grifola frondosa* (Dicks.:Fr.) S. F. Gray mushrooms. Intl. J. Med. Mushr. 8, 77-84.
- Beetz, A. & Kustudia, M. 2004. Mushroom cultivation and marketing, Horticulture Production Guide, ATTRA Publication IP 087.
- Bennett, J. W. and L. L. Lasure. 1991. More Gene Manipulations in Fungi. Academic Press, INC. New York, USA.
- Beyer, D. 2005. Spent mushroom substrate (SMS) research in the US. AMGA J. Summer Issue. 31-32.
- Buswell J. A. and S. T. Chang. 1994. Biomass and extracellular hydrolytic enzyme production by six mushroom species grown on soybean waste. Biotechnology Letters. 16: 1317-1322.
- Buswell J. A., Y. J. Cai and S. T. Chang. 1995. Effect of nutrient nitrogen and manganese on manganese peroxidase and laccase production by *Lentinula edodes*. FEMS Microbiology Letters 128: 81-88.
- Oei, P. 1991. Manual on mushroom cultivation: techniques, species and opportunities for the commercial application in developing countries, Tool Publications, Amsterdam.