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Impact of training on rural youth to engage for cultivation of oyster mushroom as a sole source of income and self-employment generation

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Abstract

The study on the impact of training on rural youth for oyster mushroom cultivation was undertaken in three village of the District, Katni, Madhya Pradesh were. Nearly 30 rural youth s were selected for mushroom cultivation after completion of cultivation training. Knowledge level of youth estimated through oral examination to know their interest before and after training. In view of pleasing flavour, adequate protein and health values, mushrooms unquestionably represent one of the world's greatest relatively untapped sources of nutritious and palatable food for the future. In spite of many problems that exist in the cultivation of mushrooms there is definitely a possibility of using mushrooms in a more important role as a source of protein to enrich human diets and it has also medicinal value in these regions, where the shortage of protein is most marked. More than 50 varieties consumed in India but only four namely button mushroom (*Agaricus bisporus*), Oyster mushroom (*Pleurotus* spp.), Milky mushroom (*C. indica*) and paddy straw mushroom (*Volvariella* spp.) are commercially cultivated. Among these, oyster mushroom is very easy to cultivate at low cost. Nearly economically profitable biotechnological process for the conversion of waste plant residues into a protein rich food which will help in overcoming protein malnutrition problem in developing countries like India Nearly 60 Kg mushroom produces in 100 kg of straw. Among the four type of production substrate used in production, wheat straw plus sugarcane molasses (3:1 ratio) obtained best in comparison to wheat straw alone and paddy straw plus gram (2:2 ratio) in which wheat plus sugarcane mixed straw base gave highest yield (1 kg/10 kg capacity bag) followed by wheat straw alone (875 g/bag) and paddy straw plus gram (800 g/bag). There were less variation in cost of cultivation in all the used four cultivation bases. Some diseases like dry bubble, wet bubble, green mould, false truffle etc are serious but can be controlled easily. Approximately Rs. 56 to 68/kg net profits was found against the average production cost Rs 31.50/kg fresh mushroom. Lowest yield (427 g/kg) was obtained in soybean. Higher net profit were achieved in wheat pulse sugarcane (Rs 68/kg), followed by wheat straw and paddy straw. Cost benefit ratio was higher in wheat straw plus sugarcane (3.96) than other treatment base.

Keywords: Mushroom span, straw for production, polybag, formalin and carbendazim

Introduction

Mushroom production in various countries were started before 1965 at commercial level and the world mushroom production has increased by nearly 75% from 1986 to 1989 with an average annual increase of around 25%. Serious efforts on mushroom research and extension work in India were started in early sixties through a scheme entitled "development of mushroom cultivation in Himachal Pradesh" In 1983. ICAR has established the National Centre for Mushroom Research and training at Sloan, Himachal Pradesh. It might be thought that the hills were more suitable for mushroom cultivation however, it was realized later that an indoor crop like mushroom can do equally cultivate other than hills. India is the world 2nd most populous country malnutrition is one of the major factors responsible for high mortality and morbidity in this country. At present we have the lowest rate of the protein consumption in the world. Animal protein is beyond the reach of low income group. Which form a large proportion of our population under prevailing circumstances, mushroom, yeast and algal foods are frequently mentioned as alternative source of food. Out of this mushroom are the most preferred because the protein contained adequate quantity of most of the essential amino acid. Mushroom cultivation is based on recycling of agricultural residues which are available in huge quantities as a result of green revolution and breakthrough in wheat and paddy production (Singh and Choubey, 1995) [4]. Species of *Pleurotus* are characterized by rapidly of growth under wide range of temperature, ability to colonize substrate in short duration and potential to tolerate higher concentration of CO₂ which act as protein cover against competitor moulds economically profitable biotechnological process for the conversion of waste plant residues into a protein rich food which will help in overcoming protein malnutrition problem

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in developing countries like India. Nearly 60 Kg Mushroom produces in 100 kg of straw. Some disease like dry bubble, wet bubble, green mould, false truffle etc. are serious but can be controlled easily (Vibha *et al.*, 2007) [5].

India annual mushroom production is still negligible as compare to world production. Presently about one lac tones of fresh mushroom is being produced in India, among them oyster mushroom cultivation is so easy and their raw material available in rural areas at low cost. Due to increasing trend of unemployment in rural areas, mushroom cultivation is a sole source of self-employment to rural youth at low cost input. The present paper describes the Impact of training on rural youth to engage for Cultivation of oyster mushroom as a sole source of income and self-employment generation beside, scope of its technology for production of *Pleurotus* species, their cost of production and net profit. Comparative production ability of oyster mushroom on different substrate was also studies.

Materials and Methods

Different species of *Pleurotus* (Oyster mushroom) can be cultivated successfully when temperature prevailed between 20 °C to 28 °C on various agricultural, domestic, industrial and forestry waste material such as Wheat straw plus sugarcane molasses, paddy straw plus gram, soybean straw and alone wheat straw were used as substrate for comparative production study. Besides required substrate, mushroom spawn, wheat brawn, plastic tub, farm line, Carbendazim, polythin bags (12×18 inch, 100 gage), iron racks, sprayer, ventilated hut, plastic sheet water etc. were also used. Firstly, plastic tub of 200 litre capacity taken, clean and sterilized and filled with 100 litre of water. Ten kg required base substrate were mixed with water for 8 to 18 hrs. In order to destroy the competing microorganisms. 7.5 gram Carbendazim and 125 ml farmlin added in the substrate containing 30 litre water in the tub and tub covered with polythin sheet. After mentioned time substrate filtered from the plastic tub and spread on polythin sheet for one hours in the room having some slope. Excess water drawn out from the straw. The spawning was done in layer; the spawn is mixed after each layer of 3 to 4 cm thickness of straw. Before filling the straw in the polythin bag 10 to 15 hole of about 1/2 cm diameter made at 5 to 10 cm distance all over the surface for free diffusion of gases and heat generated inside. Three to four layer spawning was done in each bag nearly 25-40 gram span was sprayed in inner circle of each layer. A dry newspaper piece placed at the top of each spawn bag and bag mouth was tied with rubber band. In case if holes were not made and mouth was tied, the culture will die and crop will be failed. During spawn period 20 °C to 30 °C temperature, 75 to 80 per cent relative humidity, darkness and minimum ventilation must be kept. When substrate fully covered with mycelium the polythin bags were removed and substrate blocks kept over a perforated iron frame at a distance of 10 to 15 inch and some substrate blocks hang in the room with help of rope. Two to four hours light with help of florescent tube and 2 to 3 hours cross ventilation by opening the doors and windows provided per day for better fruit body development. Substrate blocks sprayed 2 to 3 times per day to maintain the 80 to 85 per cent relative humidity. The mushroom fruiting body initiated after 15-18 day of spanning and mature mushroom harvested after 24 days of inoculation of span. The mushroom fruiting body picked when edge of pilei start to fold or curl upward. Harvested

material clean with fresh water and sundry on white cloths and pack in suitable packing for marketing (Mishra-2010) [3].

Results and Discussions

In order to assess the impact of training programme on the knowledge level of rural youths regarding oyster mushroom cultivation, the data were classified in to before and after training programme summarised in table 1. It was observed that initially 85 percent youth were possessing low interest, 10% had medium and only 5% had high level of knowledge, whereas after acquired training the production knowledge of youths dramatically become change. Only 8.33 percent youth was in low categories while 77% came in high knowledge categories table 1. For judged the interest in mushroom production by rural youth of level of qualifications were estimated and found the three was not a single qualification norm to judge the interest in production, table 2. For this purposes we have selected 30 rural youth at different qualification such as graduate, higher secondary and below 10th standard. Graduate qualified 1 candidates have less interest in mushroom cultivation followed by 2 higher secondary.

Oyster mushroom (*Pleurotus* spp.) is relatively fast growing organism, fruiting body harvested within 20 to 24 days after spawning and consume as a type of vegetable or sole in the market. It has accepted as human food from time immemorial and can immediately supply additional protein to the human diet. Beside protein availability fresh mushroom has 2.98 to 5.25 per cent carbohydrates, 0.10 to 0.18 per cent fat, 0.7 to 1.1 per cent crude fibber, 0.25 to 0.83 per cent ash and 17 to 27 cal energy. Mushroom reported very useful against several diseases of human beings like heart attacks. Diabetes, brain tumor, appendicitis, blood pressure. HIV, Uterus Cancer, hypertension etc. (Singh and Choubey, 1995) [4]. One kg dry wheat straw blocks yielded 1000 Gram fresh mushroom in wheat straw plus sugarcane followed by alone wheat straw and paddy straw plus gram. As well net profit was concern, it was maximum in wheat straw plus sugarcane (Rs 93.50) and wheat straw (Rs 80.68) fresh mushroom rate in market was Rs 125/kg and also can be sold in market at the rate of Rs 700/- per kg dry mushroom against Rs 31.50/- cost of input (Table 3). Oyster mushroom can be easily dried in the day sunlight in white cotton cloth and make powder when not sold in the market, this dry mushroom reduces 10 times as compared to fresh mushroom (Jandaik and Goyal, 1995) [1]. Kokate *et al.* (2010) [2] clearly indicated that there have been increased in its cost of production from Rs. 20 to 30 per kg, yet with increase in price received the profitability have been maintained. It was seen that when mushroom directly sold to consumer, obtained more unit price in comparison to sold through commission agent/ other agencies. Rs. 53 to 93/kg net profit was obtained as per base of the production. Data in table 3 indicated that higher B:C ratio obtained in Wheat plus sugarcane base followed by others bases of production. Average production cost fluctuated from Rs 28 to Rs 32 as per treatment. Among the different substrate used in production, wheat straw plus sugarcane molasses obtained best in comparison to paddy straw and wheat straw alone. Lowest yield (427 g/kg) was obtained in soybean. Extra income from production of mushroom brings happiness in the house of marginal farmers without expending extra money in their production because maximum required material available in their home.

Table 1: Impact of training in change the knowledge level of rural youth.

Categories	knowledge level before training (%)	Knowledge level after training (%)
Low	85	9
Medium	10	14
High	5	77

Table 2: Overall interest of rural youth for start of mushroom cultivation at their home were estimated after six month of training

Qualification	Unfavourable	Favourable	Most favourable
Graduate	1	1	2
Higher secondary	2	8	4
High school	-	6	6

Table 3: Comparative productivity of oyster mushroom on different substrate and profitability

Substrate/Treatment	Production g /kg base	Total Expenditure (Rs)/kg	Net return (Rs)/kg	B:C Ratio
Wheat straw	875	28.69	80.68	3.81
Paddy straw + gram	800	28.57	71.43	3.50
Soybean	427	26.39	53.12	3.01
Wheat+ sugarcane(3:1)	1000	31.50	93.50	3.96

Sold rate Rs 125/kg

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