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RESEARCH ARTICLE

Oyster mushroom cultivation: Sole source of income for marginal and landless farmers

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ABSTRACT

More than 50 varieties of mushrooms are consumed in India but only three, namely, button mushroom (*Agaricus biosporus*), oyster mushroom (*Pleurotus* spp.) and paddy straw mushroom (*Volvariella* spp.) are commercially cultivated. Among these, oyster mushroom is very easy to cultivate at low cost. Training on oyster mushroom cultivation started in 2009-10 at Krishi Vigyan Kendra with 19 male and 11 female trainees and in 2012-13, 114 male and 76 female trainees participated in training and started cultivation. Impact of training was found very positive resulting more than 1800 landless and marginal farmers family adopted oyster mushroom cultivation as income source and also got self-employment. Wheat + sugarcane produced 0.934 kg mushroom in 1 kg base and was maximum than other bases used, whereas soybean base produced minimum (0.363 kg) so far Wheat + sugarcane gave more profit followed by wheat, straw and soybean.

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INTRODUCTION

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 Center for Mushroom Research and Training at Solan earlier. 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 in which malnutrition is one of the major factors responsible for high mortality and morbidly 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 these, mushrooms 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 Chaubey, 1995). Species of *Pleurotus* are characterized by rapidly of growth under wide range of temperature, ability to colonise substrate in short duration and potential to tolerant higher concentration of CO_2 which acts 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 in developing countries like India. Nearly 60 kg mushroom is produced in 100 kg of straw. Some diseases like dry bubble, wet bubble, green mould, false truffle etc. are serious but can be controlled easily. In India, annual mushroom production is still negligible as compared 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 its raw material is 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 scope of its technology for production of *Pleurotus* species, their cost of production and net profit. Comparative production ability of oyster mushroom on different substrates has been studied.

MATERIAL AND METHODS

Different species of *Pleurotus* (oyster mushroom) can be cultivated successfully when temperature prevailed between 20^0 C to 28^0 C on various agricultural, domestic, industrial and forestry waste material. Wheat straw, paddy straw, soybean straw and wheat plus sugarcane molasses were used as substrate for comparative production study. Besides required substrate, mushroom spawn, wheat brawn, plastic tub, farma line, bavistine, 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 was taken, cleaned and sterilized and filled with 100 litre of water. Ten kg required substrate was mixed with water for 8 to 18 hrs. In order to destroy the competing micro organisms, 8.5 g bavistin and 120 ml farm a line were added in the substrate containing water in the tub and tub was covered with polythin sheet. After mentioned time, substrate was filtered from the plastic tub and spread on polythin sheet for one hour in the room having some slope. Excess water drawn out from the straw. The spawning was done in layer; the spawn was mixed after each layer of 3 to 4 cm thickness of straw. Before filling the straw in the polythin bag, hole of about 1 cm diameter made at 10 to 15 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. A wet news paper 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 20^0 C to 30^0 C temperature, 75 to 80 per cent relative humidity, darkness and minimum ventilation must be kept. When substrate was 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 hanged in the room with the help of rope. Two to four hours light with help of florescent tube and 2 to3 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 80 to 85 per cent relative humidity. The mushroom fruiting body picked when edge of piliei started to fold or curl upward. Harvested material was cleaned with fresh water and sun dried on white cloths and packed in suitable packing for marketing (Mishra, 2010).

RESULTS AND DISCUSSION

Oyster mushroom *Pleurotus* spp. is relatively fast growing organism (Fig. 1). Fruiting body is harvested within 20 to 23 days after spawning and consumed as a type of vegetable or sold in the market. It has accepted as human food from time immemorial and can immediately supply additional protein to the human diet. Beside protein, 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 fibre, 0.25 to 0.83 per cent ash and 17 to 27 cal energy. Mushroom has been reported very useful against several diseases of human beings like heart attacks, diabetes, brain tumor, appendicitis, blood pressure, HIV, uterus cancer, hypertension etc. Mushroom cultivation so easy to became more popular by spreading the technology through training. In 2009-10 total 30 people became trained whereas in the year 2012-13, 190 trainees got cultivation training (Table 1).

Table 1: Impact of training in oyster mushroom cultivation

Year	Number of trainees		Horizontal spree of cultivation (Number of family)
	Male	Female	
2009-10	19	11	-
2010-11	36	24	337
2011-12	53	39	589
2012-13	114	76	885
Total	222	150	1811

Table 2 : Comparative productivity and profitability of oyster mushroom on different substrates

Substrates	Production (per kg base)	Total expenditure	Net profit (per kg base)
Wheat straw	0.826	21.13	20.17
Paddy straw	0.719	18.81	17.14
Soybean straw	0.364	12.53	2.47
Wheat + sugarcane (3:1)	0.934	22.16	24.54

Fig. 1 : Oyster mushroom (*Pleurotus* sp.)

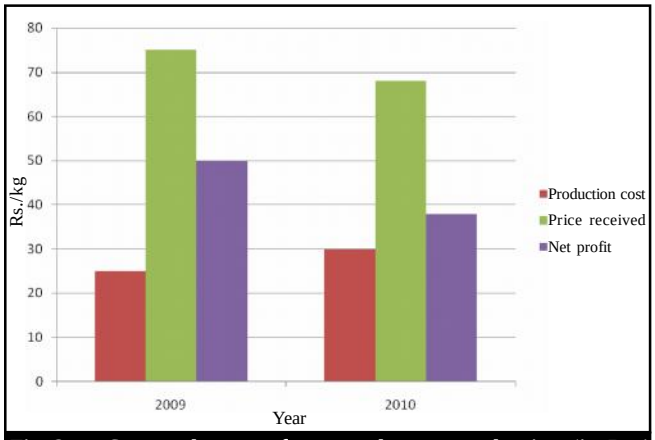

Fig. 2 : Cost and return from mushroom production (in Rs./kg) on wheat straw

One kg dry wheat straw blocks yielded 800 to 900g fresh mushroom, which can be sold in market at the rate of Rs. 70/- per kg against Rs. 30/- cost of input (Fig. 2). Oyster mushroom can be easily dried in the day sunlight in white cotton clothe and make powder when not sold in the market. This dry mushroom reduces 10 times as compared to fresh mushroom (Jandaik and Goyal, 1995). Kokate *et al.* (2010) 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 has 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. Nearly Rs. 30 to 50 net profit was found In comparison to average production cost of Rs. 23. Among the different substrates used in production, wheat straw pulse sugarcane molasses obtained best in comparison to paddy straw and wheat straw alone. Lowest yield (0.364g/kg) was obtained in soybean. Higher net profit was achieved in wheat + sugarcane (Rs. 24) followed by wheat straw and paddy straw (Table 2). Extra income from production of mushroom brings happiness in the house of marginal farmers without expending extra money in their production because they used homely available materials.

REFERENCES

Jandaik, G.L. and Goyal, S.P. (1995). Farm and farming of oyster mushroom. In : *Mushroom production technology*, pp. 72-78.

Kokate, K.D., Rathi, Anil, Narula, A.M. and Keshav (2010). *Mushroom farming*, pp. 01-35.

Mishra, K.K. (2010). Major constraints in adoption of mushroom farming. *Indian farmer Digest*, March 2010, pp. 29-31.

Singh, R.P. and Chaube, H.S. (1995). Status and prospects of mushroom cultivation in India. In : *Mushroom production technology* pp. 01-09.