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Mushroom production-A better option for vegetables in eastern Uttar Pradesh

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Abstract

Mushroom though classified as vegetable in the food world, are not technically plants. Basically two type of mushroom production were taken by KVK, Bhadohi and KVK, Kushinagar first one is button and second type is oyster. Oyster production is simple and not affected by climate but production of button in complex and affected by climate. Therefore cultivation of button is possible only in winter but oyster is in all season. KVK activity is training, FLD, OFT and extension activities.This article is basically for oyster mushroom.The profitability of oyster mushroom is indicates that 0.71-0.95 kg oyster mushroom can be obtain from one kg wheat straw and by investing Rs. 1420 to 2919 can provides the net return of Rs. 3780-5265 in just 45 days with the B:C ratio 2.80 to 3.6:1. Therefore, it is clear from above discussion that Oyster mushroom production is a better option of income for land less Farmer's and Farm women and it needs the more extension strategy to encourage more and more people for mushroom production as it is good for health and a better way for earning wealth as well.

Keywords: oyster, button mushroom, bc ratio and production technolgy

Introduction

Mushroom though classified as vegetable in the food world, are not technically plants. They belong to the fungi Kingdom (Megan 2017) [3]**.** Mushroom are fleshy fungi constituting a purely vegetarian diet which is very tasty and nutritious. It constitutes low calorie diet it is rich in protein, mineral, vitamins in ample amount due to which mushroom is considered a nutritional and medicinal food (Rana *et al* 2007). In general, mushroom fruit bodies on dry weight basis contain 55% carbohydrate, 32% protein, 2% fat and rest mineral and vitamins. These are excellent source of thiamine (vitamin B-1), riboflavin (B2), niacin, pantothenic acid, biotin, folic acid and vitamin C,D,A and K to some extent. Moreover those vitamins and minerals are retained even after cooking. Minerals present in mushroom are phosphorus, potassium, copper and iron. Mushroom protein contains all nine essential amino acids required for human growth. So far 100 mushrooms have been accepted as food world wide. Among the 33 globally cultivated mushrooms 3 mushrooms, i.e. White button, Oyster and paddy straw mushrooms are popularly grown in India. Most of the mushrooms have unique ability to degrade cellulose, hemi-cellulose and lignin of different agro wastes and organic waste materials and are effective means of recycling these waste materials in to edible biomass of high nutritive and medicinal value. Crop residue provide little economic return to the farmers, however if it used in mushroom cultivation, it can lead to integrated rural development by increasing income and self employment (Sharma and Yadav 2008). Therefore considering the importance of mushroom production and to create a viable business option in rural environment for landless farmer's & Farm women in Eastern Uttar Pradesh, the innovation was planned by Krishi Vigyan Kendra Kushinagar with the following objective-

a. to assess the profitability of mushroom production in Eastern Uttar Pradesh
b. to assess the utilization pattern of mushroom in Eastern Uttar Pradesh
c. to assess perception of farmer's about mushroom production

Mushroom Cultivation in India

In India, a marginal farmer and small manufacturing units produce Fifty percent of mushrooms, and the remaining mushroom produce by industrial institutions.

There are two types of mushroom growers in India, and seasonal farmers produce on a small scale.

While commercial mushroom framer who takes production continue entire year in large scale.

Mostly both develop white button mushrooms to your domestic market and export.

The seasonal button mushroom growers are restricted to temperate regions like Himachal Pradesh, Jammu, and Kashmir, hilly areas of Uttar Pradesh, hilly areas in Tamil Nadu, and North Eastern areas where farmers take 2-3 plants of button mushrooms at a year.

Commercial mushroom farming required heavy expenditure on the building infrastructure, purchase of machinery and equipment, raw materials, labor, and energy.

A mushroom grower needs to undergo a practically oriented training program.

In India, there are various government & NGO organizations provide, provide mushroom cultivation training. However, NRCM is a pioneer institute that

provides training.

Our Indian government also promotes mushroom cultivation; hence they give subsidies under a different scheme like the national horticulture board, the Ministry of food processing, and APEDA.

Before making to start mushroom farming, decision following Factors have to be Considered to become successful in the commercial mushroom production business :

1. The mushroom farm should be closer to the house of the farmer for successful Participation and monitoring purposes.
2. Availability of lots of water on the farm
3. Easy accessibility to raw materials at competitive prices in the region
4. Simple access to labor at more affordable prices.
5. Availability of power at competitive prices, as electricity is a significant input in mushroom cultivation.
6. The farm should be from industrial pollutants such as chemical fumes,
7. There should be provision for sewage disposal.
8. There should be provision for future growth in the farm.

Methodology

To assess the profitability of oyster mushroom production Front line Demonstration and trainings were conducted by KVK Kushinagar & KVK Sant Ravidas Nagar. For capturing the utilization pattern of mushroom and perception of farmer's & Farm women, data was gathered from 120 farm women from the district Kushinagar and Sant Ravidas Nagar. The district Kushinagar and Sant Ravidas Nagar was selected purposively as both of them are governed by the same Host Institution i.e., Indian Council of Agriculture Research- Indian Institute of Vegetable Research, Varanasi. Two blocks from each district i.e., Seorahi and tamkuhi blocks from district Kushinagar and Block Aurai & Bhadohi from district Sant Ravidas Nagar were selected purposively as they were the selected blocks for KVK interventions. Village piperaghat from Seorahi block and Dhuria Kot from Tamkuhi Block of district Kushinagar & village from Aurai Block and village from Block Bhadohi from district Sant Ravidas were selected purposively. From each village 30 farm women were selected randomly. To analyze the perception of respondents and utilization pattern pre tested interview schedule was used. For capturing the perception a set of 10 statements reflecting the various aspect related to mushroom and Likert's Five.

Steps involved in mushroom cultivation:

1. Phase I Composting.
2. Phase II Composting.
3. Spawning.
4. Casing.
5. Pinning.
6. Harvesting.

Results and Discussion

The profitability of oyster mushroom is presented in table 1 indicates that 0.71-0.95 kg oyster mushroom can be obtain from one kg wheat straw and by investing Rs. 1420 to 2919 can provides the net return of Rs. 3780-5265 in just 45 days with the B:C ratio 2.80 to 3.6:1.

Table 1: Profitability of Mushroom Production in District Kushinagar & District Sant Ravidas Nagar

Year	No. of Farmer	Yield/kg wheat straw	Cost	Benefit	Net Return	B:C Ratio
2015-16	18	0.95 kg	2919	8184	5265	2.8
2016-17	8	0.71	1420	5200	3780	3.6

The findings of the study are in agreement with the finding of Bhatt *et al* 2011 [2] and Awasthi *et al* 2015 [1].

Data related to utilization pattern of Oyster mushroom presented in table 2 showed a wide variation. All the respondents utilized Oyster mushroom in preparation of mushroom Curry (100%) followed by preparation of mushroom curry with Potato (95.83%), Preparation of Pakora (91.67%), Preparation of mix vegetable with mushroom with mushroom (81.675), preparation of mushroom Rice (12.5 %),preparation of mushroom pickle (3.6 %) and drying of mushroom(2.4 %).

Table 2: Utilization Pattern of Oyster Mushroom

Reciepes	Utilization Pattern		Rank
	F	P	
Mushroom Curry	120	100.0	I
Pakora	110	91.67	III
Mix Vegetable with Mushroom	98	81.67	IV
Mushroom Curry with Potato	115	95.83	II
Soup	0	00.00	-
Drying of mushroom	20	02.40	VII
Mushroom Rice	150	12.50	V
Mushroom Pickle	30	03.60	VI

In order to analyze the perception of the selected respondents, they were asked to respond to 10 different statement using Likert's Five Point Scale Strongly Agree, Agree Undecided Disagree Strongly disagree. On the basis of the score, mean and rank have been calculated for each statement for the purpose of analysis.

Table 3: Perception of Farmer's & Farm women about Oyster Mushroom Production

S. No.	Statement	SA	A	UD	DA	SDA	Mean	Rank
1.	Mushroom production provides high return	73.3	5.8	8.3	10.0	2.5	3.7	VI
2.	Mushroom production is more easier than conventional farming of other crop	65.8	2.5	10	9.16	12.5	4.0	IV
3.	Mushroom is beneficial for patient suffering from various disease	66	4.16	20.8	4.16	4.16	4.25	III
4.	Mushroom is protein rich food	62.5	12.5	20.8	2.5	1.6	4.308	II
5.	Mushroom production is good option for landless and poor	67.5	7.5	19.1	5.6	-	4.36	I
6.	Raw material needed for mushroom production is available in abundance in rural area	60.8	15	9.16	6.6	8.3	4.13	V
7.	Mushroom production is easily	55.8	11.6	15.8	10	6.6	4.0	IV
8.	Mushroom production requires specific temperature and humidity which is difficult to maintain	12.5	4.16	6.6	13.3	63.3	2.525	VIII

9.	Spawn is the basic component for mushroom production whose availability is uncertain	9.16	15.8	23.3	34.1	17.5	2.65	VII
10.	Spent mushroom substrate may be further used	9.16	4.16	37.5	27.5	21.6	2.516	IX

*SA-Strongly Agree, A-Agree, UD- Un Decided, DA-Dis Agree, SDA-Strongly Dis Agree

It is evident from the table- 3 that respondents ranked statement" Mushroom production is good option for landless and poor rural youth" as Ist. The table reveals that respondents were strongly agreed with the statement "Mushroom is protein rich food "as IInd rank. The rank IIIrd was given to the statement that" Mushroom is beneficial for patient suffering from various disease. Followed by the statement that" Mushroom production is more easier than conventional farming of other crop..The last and X rank was given to the statement that" Spent mushroom substrate may be further used". The table 3 indicated the positive perception of respondents about mushroom production. The respondents were strongly agree to agree with the benefit of mushroom production.

Therefore it is clear from above discussion that Oyster mushroom production is a better option of income for land less Farmer's and Farm women and it needs the more extension strategy to encourage more and more people for mushroom production as it is good for health and a better way for earning wealth as well.

Fig 1

Fig 2

Fig 3

Conclusions

It can be concluded that the mushroom is good for human health, different type of mushroom is available in markets. It is evident that respondents ranked statement" Mushroom production is good option for landless and poor rural youth" as Ist. The table reveals that respondents were strongly agreed with the statement "Mushroom is protein rich food " as IInd rank. The rank IIIrd was given to the statement that "Mushroom is beneficial for patient suffering from various disease. Followed by the statement that "Mushroom production is more easier than conventional farming of other crop..The last and X rank was given to the statement that "Spent mushroom substrate may be further used ".the table 3 indicated the positive perception of respondents about mushroom production. the respondents were strongly agree to agree with the benefit of mushroom production.

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