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## Impact assessment of button mushroom cultivation in empowering self-help groups (SHGs) of Tonk District of Rajasthan

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### Abstract

A collective effort has been done in the upliftment of farm women in Tonk district of Rajasthan. 80 Self Help Groups (SHGs) were selected for Button Mushroom cultivation in Tonk district. Selection of SHGs was done by Rajasthan Grameen Aajeevika Vikas Parisad (Rajeevika), Tonk, Financial assistance was provided by Agricultural Technology Management Agency (ATMA), Tonk and Technical support and trainings on Button Mushroom cultivation was provided by Krishi Vigyan Kendra, Tonk, Banasthali Vidyapith. Results reflected that Button mushroom cultivation has empowered SHGs in remarkable sustainable and acceptable manner. Ninety two percent SHGs believed that Button mushroom cultivation proved profitable in improving their living of standard.

**Keywords:** Button mushroom cultivation, spawn, shelf help group, employment generation

### Introduction

In rural areas, poverty, illiteracy, lack of skills, lack of knowledge of technology, lack of formal credit are the main problems and these problems cannot be tackled by an individual. At village level, sound community network plays an important role for credit linkage and reducing poverty. To overcome these problems collective efforts are required. Thus, forming of women SHGs plays an important role in alleviating poverty and improving their status by encouraging self-employment. SHG is a group of women coming together for improving their living of standards. Forming SHGs empowers women and they become able for decision making and uplift their living of standards and financial independence. That in turn, helps in reducing poverty at village level. According to United Nations Development Programme report, globally 67 percent of women are involved in world's work but only 10 percent women are earning. Thus, there is a need to provide the opportunities for income generating activities for women. To solve this problem, Mushroom cultivation can be instrumental to empower women in SHGs mode.

Mushroom is an edible fruiting body of the edible fungus. Mushroom has high nutrients with medicinal properties. Because of its nutritive value, mushroom has a potential to reduce malnutrition status in India. Mushroom cultivation can also play an important role in generating income and employment in rural areas as the raw material which is required for the cultivation of mushroom is easily available here. Mushroom cultivation again is profitable in terms of nutritional security by converting agricultural waste to valuable protein source. There are different types of Mushroom that includes Button Mushroom, Oyster, Milky, Paddy straw, Shitake. In India, there is a plethora of opportunities in Mushroom cultivation because of suitable climate, temperature and availability of agricultural farm waste material. In India, the total production of mushroom is approximately 0.13 metric tons in which Button mushroom has highest production and demand. On one hand, Button mushroom is a good source of protein, vitamin, mineral, fibre and antioxidants while, on the other hands, it has very less amount of Fat. In vitamins, it is a good source of Thiamin, Riboflavin, Niacin, Folic acid, Vitamin C and D and in minerals; it is a good source of Potassium, Phosphorus, Calcium, Magnesium, Iron and copper. Button mushroom cultivation does not require fertile land as it is an indoor crop not requiring sunlight.

Icing on the cake is that it does not require capital investment for small scale production. Button Mushroom cultivation technique can play an important role in food and nutritional security with the improvement of socio-economic status of SHGs in rural areas.

### Methodology

Demonstrations on Button Mushroom cultivation techniques with the involvement of women Self Help Groups at Tonk district was conducted in convergence mode with three-line departments; Agricultural Technology Management Agency (ATMA), Tonk, Rajasthan Grameen Aajeevika Vikas Parisad (RAJEEVIKA), Rajasthan and Krishi Vigyan Kendra, Banasthali Vidyapith in the year 2021. Eighty Self Help Groups of Tonk district registered under RAJEEVIKA from the three villages Mudia, Gunki and Raholi were selected for Button Mushroom cultivation (500 bags by each SHG). Training programmes and Technical guidance for Button Mushroom cultivation was provided by Krishi Vigyan Kendra, Banasthali Vidyapith. Financial support for hut preparation and other required critical input materials like spawn for Button Mushroom cultivation was provided by ATMA department. A demonstration unit of Button Mushroom was also established at Krishi Vigyan Kendra, Banasthali Vidyapith for getting better understanding of Button Mushroom cultivation. Knowledge evaluation of SHGs on Button mushroom was carried out. Button Mushroom cultivation has been done in three steps that included compost preparation, spawning and casing. Detailed methodology of Button Mushroom cultivation for 100 bags is given below:

**Composting:** Composting is a very important step for successful Button Mushroom Cultivation. It took 28 days for compost preparation following its long method. For composting required materials and procedure are given below:

**Required material: For composting:** Wheat straw-5 quintal, Urea-8.5 kg, Calcium Nitrate-10 kg, Single Super Phosphate-5 kg, Murate of Potash-5 kg, Chokar (wheat husk)-25 kg, Seera-8.33 kg, Gypsum-50 kg, DAP-1 kg, Formaldehyde solution (37-41%)-1.5 litre and Bavistin (Carbendazim)-50 gm, Water-30 litre. *For spawning:* Spawn-15 kg and polythene bags-3 kg. *For casing:* Cocopeat-40 kg, Farm yard manure (FYM)- 80 kg, Formaldehyde solution 1 litre and Water 40 litre.

**Procedure:** For composting, Wheat straw was made wet with water for two days. After two days, a pile of straw (Height-1.5 meter and width-1.5 meter, Length- >1.5 meter) was made after properly mixing Urea, Calcium Nitrate, Single Super Phosphate, Murate of Potash, Chokar (wheat husk), Seera, DAP with wet straw. Turning was done at 6<sup>th</sup> and 10<sup>th</sup> day after pile preparation. At 13<sup>th</sup> day, turning of pile was done after mixing Gypsum. Again at 16<sup>th</sup> day, 19<sup>th</sup> day, 22<sup>th</sup> day and 25<sup>th</sup> day turning of pile was carried out. On 28<sup>th</sup> day, Formaldehyde solution and bavistin were dissolved in water and sprayed in pile to disinfect it. Then it was covered with polythene sheet for two days. Thereafter, the compost was ready for spawning. The good quality compost with fire fumes (cotton thread like structure) free from any kind of smell was obtained. Now this compost was ready for spawning. Moisture and pH level of compost was taken into consideration for successful Button Mushroom cultivation as

both play an important role in Spawn run. Before Spawning, polythene sheet was removed from prepared compost before 3-4 hours to remove the smell of Formaldehyde which otherwise could cause harm in spawn run. For spawning, the spawn also called the seeds of mushroom was mixed with prepared compost and filled in bags with 10 kg capacity. These bags were kept in hut for spreading the spawn in the compost (for spawn run process). Temperature (23-25 °C) was taken into consideration for spawn run hence Button mushroom cultivation was done in *Rabi* season. It took 25 days to spawn run. Thereafter, casing of these bags were done. In casing process, Cocopeat was soaked in water overnight and FYM was rinsed with water for 2-3 times to remove impurities in it. Then both Soaked Cocopeat and FYM were mixed evenly and treated with diluted formaldehyde and covered with polythene sheet for five days. Polythene sheet were removed in the evening. Next morning, this mixture was spread on the spawned bags in thin layer (3-4 cm) and bags were kept in the hut maintaining temperature (16-18 °C) and humidity. At this stage, humidity plays very crucial role in Button mushroom production hence it was maintained by spreading Sand on the floor of hut. Everyday this sand was wet with water to maintain humidity in hut. After 15-20 days of casing, grown Button Mushroom was harvested.

To check the feasibility and sustainability of Button mushroom cultivation technology, Yield (kg), Cost of cultivation (Rs.), Gross income (Rs.), Net income (Rs.) and B:C ratio of button Mushroom was calculated.

### Results and Discussion

Table 1 depicted the acceptability evaluation of Mushroom production by SHGs. 76% SHGs agreed with the fact that mushroom is a vegetarian food. 78% SHGs accepted the facts that Button mushroom is a nutritious and tasty food. 73% SHGs found the Button mushroom immunity booster. 76% SHGs agreed with that Button mushroom production requires less time and labour. While, 92% SHGs believed that Button mushroom cultivation is profitable. 98 and 96% SHGs accepted the fact that Button mushroom cultivation uses farm waste and does not require fertile land respectively. 97% SHGs believed that it is an indoor crop. 74% SHGs knew that Button mushroom cultivation can be processed in different food items and stored. Button mushroom cultivation proved a technically sustainable, feasible and profitable enterprise providing good opportunities for income and employment generation among SHGs and farm women in rural areas.

**Table 1:** Acceptability evaluation of Button Mushroom production by SHGs

S. No.	Statement	Yes (%)	No (%)
1	Mushroom is a vegetarian food	76	24
2	It is nutritious food	78	22
3	Its taste is good	78	22
4	It improves our immunity	73	27
5	It requires less time and labour	76	24
6	It is a profitable business	92	08
7	It requires farm waste for its cultivation	98	02
8	It does not require fertile land	96	04
9	It is an indoor crop	97	03
10	It can be processed into different food products	74	26

### Economic evaluation of Button Mushroom cultivation per 100 bags

Table 2 depicted that the economic feasibility of Button mushroom cultivation. The yield of Button mushroom was recorded 190 kg per 100 bags with Rs 38000 gross income. Total cost incurred in preparing 100 bags of Button mushroom was Rs18540. Net profit and B:C ratio of Button mushroom cultivation were Rs 19460 and 2.04 respectively

for 100 bags indicating Button mushroom cultivation a profitable enterprise especially for SHGs as in Button mushroom cultivation team work is required. Documentary on Button Mushroom cultivation was also prepared by ATMA department to showcase the technology for income and employment generation opportunities.

**Table 2:** Economic evaluation of Button Mushroom cultivation per 100 bags

Technology	Yield (kg)	Gross income (Rs)	Cost of Cultivation (kg)	Net income (kg)	B:C ratio
Button Mushroom	190	38000	18540	19460	2.04



**Glimpse of Button mushroom cultivation**

### Conclusion

From the above efforts made for SHGs for income and employment generation it is inferred that button mushroom production technique is a profitable enterprise. Benefits of Button mushroom cultivation techniques proved beneficial are financial improvement, social integrity, improving efficiency of government scheme to allivate poverty at local level. Hence, it can be concluded that SHGs played an important role in rural poverty alleviation and income and employment generation it also improved confidence in SHGs for decision making.

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