**Effectiveness of a Training Program on Mushroom Cultivation within the ICAR Funded TSP Project**

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**Abstract**

Assessing effectiveness stands as a crucial parameter for gauging the success of any program. In rural and semi-urban areas, mushroom production emerges as a straightforward and cost-effective means to combat poverty while generating employment opportunities for farm women. A study was undertaken to evaluate the impact of training on enhancing knowledge in mushroom production as a pathway to self-employment. This training initiative targeted farm women keen on venturing into mushroom cultivation. Participants underwent comprehensive training covering cultivation techniques, spawn and substrate preparation, marketing strategies, preservation methods, and value addition. Mushroom cultivation is acknowledged as a technically viable and lucrative agricultural practice, acknowledged by both researchers and farmers as a means to generate substantial income, employment opportunities, and foster rural development. Initiatives aimed at employment generation and poverty alleviation play a pivotal role in fortifying the socio-economic status of marginalized populations, particularly rural women. Numerous agricultural universities, Krishi Vigyan Kendra, and research centres have organized extensive training programs and workshops over time to equip women with the necessary skills for mushroom cultivation. Consequently, training initiatives have gained widespread acceptance as a strategy with significant returns on investment. The current research investigation was conducted at GBPUA&T, Pantnagar. Five training sessions on “Techniques of Mushroom production and value Addition” were organized under the Tribal Sub Plan project, funded by ICAR at MRTC, Pantnagar, with a total of 200 SC/ST farm women selected for data collection. Data was gathered through interviews and discussions. The findings from this study revealed that majority of respondents belonged to medium age (53 per cent), primary education (55 per cent), small family size (52.50 per cent), Cosmopoliteness (14.50 per cent), Medium level extension contact (76.50 per cent). Gain in knowledge was also increased after implementation of training programme.

Key words: Mushroom growers, knowledge, training

**Introduction**

India is predominantly an agriculture-based country, owing to its diverse soil and climatic conditions, which facilitate the production of a variety of crops across different regions. This diversity also presents vast potential for mushroom cultivation, thanks to the ample availability of raw materials and favorable climatic conditions. The FAO has endorsed mushrooms as a valuable food item contributing to the protein nutrition of developing nations. In a country like India, where vegetarianism is prevalent, efforts should be directed towards popularizing vegetable protein sources like mushrooms, as documented by **Nagaraj *et.al.* (2017)**.

Mushroom cultivation has garnered recognition as a technically feasible and profitable venture, widely embraced by researchers as a means for higher income generation, employment, and rural development. Moreover, mushroom cultivation can significantly contribute to the efficient utilization of agricultural and industrial waste, thereby aiding in poverty alleviation and providing employment opportunities for educated unemployed youth. **(Kandpal *et.al*., 2023)**

Extension trainings have been recognized as a means for exchanging ideas within communities, making them a widely accepted strategy with significant returns on investment. There is an urgent need to impart technical knowledge to farm women and youth to encourage the adoption of mushroom production as an income-generating activity, thereby enhancing their economic status. Mushroom production is characterized by its simplicity, low cost, suitability for rural areas, and labor-intensive nature, making it capable of providing employment opportunities in both rural and semi-urban areas. **(Joshi, *et. al*. 2022).**

The production of mushrooms can improve the socio-economic conditions of farmers and their families, playing a significant role in poverty alleviation and employment generation for educated unemployed youth in rural and semi-urban areas. Therefore, the present study aims to assess knowledge and skill development for mushroom production as an enterprise or self-employment opportunity. The training provided by MRTC, GBPUA&T, Pantnagar, aims to empower SC/ST farm women to increase their income and become self-reliant entrepreneurs in the future. Hence, this study endeavors to evaluate the knowledge levels of SC/ST farm women regarding different aspects of mushroom cultivation.

**Materials and Methods**

The training program on mushroom production targeted SC/ST farm women interested in self-employment. The study took place at MRTC, GBPUA&T, Pantnagar. Five training sessions on “Techniques of Mushroom production and value Addition” were organized under the Tribal Sub Plan project, funded by ICAR at MRTC, Pantnagar, with a total of 200 SC/ST farm women selected for data collection A total of 200 trainees received training on mushroom cultivation in five batches. A questionnaire was developed to gather general information and background details of the participants, including their landholding. Prior to the training program, a pre-evaluation test was conducted to assess the participants' existing knowledge levels regarding cultivation techniques, spawn preparation, substrate preparation, marketing, preservation, value addition, and other related aspects. The training program provided comprehensive instruction on various aspects of mushroom production. Following the completion of the training course, a post-evaluation was conducted to evaluate the knowledge acquired by the trainees and the effectiveness of the training. To assess the trainees' knowledge, a set of questions related to mushroom production, nutrient content, different mushroom products, storage, Value addition harvesting and marketing were used. The deviation or gain in knowledge was calculated by comparing the scores obtained in the pre- and post-training knowledge tests.

**Results and Discussions**

**Table 1: Distribution of respondents according to socio-economic status**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Category** | | **Number** | **Percentage** |
| 1. | **Age** | Young ( Up to 35) | 87 | 43.50 |
|  |  | Medium(35-45) | 106 | 53.0 |
|  |  | Old (Above 45) | 7 | 3.5 |
| 2. | **Education** | Can sign only | 17 | 8.50 |
|  |  | Primary education | 110 | 55 |
|  |  | Secondary education | 63 | 31.50 |
|  |  | Above secondary | 10 | 5 |
| 3. | **Family size** | Small family (up to 4 members) | 105 | 52.50 |
|  |  | Medium family (5 to 7 members) | 67 | 33.50 |
|  |  | Large family (above 7 members) | 28 | 14 |
| 4. | **Annual family income** | Low income (up to 60,000) | 61 | 30.50 |
|  |  | Medium income (61,000 to 120000) | 131 | 65.50 |
|  |  | High income (above 120000) | 8 | 4 |
| 5. | **Cosmopoliteness** | Low cosmopolite | 29 | 14.50 |
|  |  | Medium cosmopolite | 146 | 73 |
|  |  | High cosmopolite | 25 | 12.50 |
| 6. | **Extension media contact** | Low contact | 25 | 12.50 |
|  |  | Medium contact | 153 | 76.50 |
|  |  | High contact | 22 | 11 |
| 7. | **Organizational participation** | Low participation | 21 | 10.50 |
|  |  | Medium participation | 159 | 79.50 |
|  |  | High participation | 20 | 10 |
| 8. | **Innovativeness** | Low innovative | 38 | 19 |
|  |  | Medium innovative | 154 | 77 |
|  |  | High innovative | 8 | 4 |
| 9. | **Fatalism** | Low fatalist | 34 | 17 |
|  |  | Medium fatalist | 153 | 76.50 |
|  |  | High fatalist | 13 | 6.50 |

In this section, the findings on the farmers’ selected characteristics have been discussed and a summary profile of these characteristics is presented in Table 1.

**Socio-economics characteristics of respondents:** Table 1 indicates that an overwhelming majority (53%) of the respondents belonged to middle age followed by young aged category (43.50%) where considerable proportion of the respondents had primary education (55%) and small sized households (52.50%). The highest proportion (65.50%) of the trained farm women had medium annual income whereas only 33.50 % of them had low annual income. An overwhelming majority of the respondents had high cosmopolite (73%), low to medium extension contact (76.50%) and low organizational participation (79.50%). More than two-thirds (77%) of the respondents had medium innovativeness while only 19% of them had low innovativeness. Majority (76.50%) of the respondents in the study area were medium fatalist.

**Table: 2: Gain in knowledge after training with respect to different components**

**N=200**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Parameters** | **Pre training (%)** | **Post training (%)** | **Change in knowledge** |
| 1. | Preparation of compost. | 25 (12.50) | 186 (93) | 161 (80.5) |
| 2. | Method of spawn preparation. | 48 (24) | 195(97.5) | 147 (73.5) |
| 3. | Suitable temp for spawn production. | 3 (1.5) | 189 (94.5) | 186 (93) |
| 4. | Importance of casing. | 38 (19) | 190 (95) | 152 (76) |
| 5. | Nutrition and health benefits. | 56 (28) | 191(95.5) | 135 (67.50) |
| 6. | Preparation of spawn. | 47(23.5) | 198 (99) | 151(75.5) |
| 7. | Harvesting methods. | 56(28) | 184 (92) | 128 (64) |
| 8. | Different mushroom recipes. | 3 (1.5) | 200 (100) | 197 (98.5) |
| 9. | Preservation techniques. | 19 (9.5) | 188 (94) | 169 (84.5) |
| 10. | Government schemes for mushroom growers. | 17 (8.5) | 197 (98.50) | 180 (90) |
| 11. | Use of social media in Mushroom Cultivation. | 8 (4) | 192 (96) | 184(92) |
| 12. | Economic profits. | 67(33.5) | 189 (94.50) | 122(61) |
| 13. | Women friendly avenues. | 36 (18) | 193 (96.50) | 157(78.50) |
| 14. | Requires less land to grow. | 67 (33.5) | 190 (95) | 123(61.50) |
| 15. | Needs less amount of money. | 89 (44.5) | 190 (95) | 101(50.50) |
| 16. | Gives quick return in time. | 13(6.5) | 198 (99) | 185(92.50) |
| 17. | Effect of Climatic condition. | 6 (3) | 187 (93.50) | 181(90.50) |
| 18. | Species of mushrooms. | 90 (45) | 199 (99.5) | 109 (54.50) |
| 19. | Eco-friendly crop. | 89 (44.5) | 197 (98.5) | 108 (54) |
| 20. | Contain equal protein to other non-veg food. | 16 (8) | 198 (99) | 182 (91) |
| 21. | Disease and its effects on mushroom cultivation. | 17 (8.50) | 185(92.5) | 168 (84) |
| 22. | Clean knife and gloves should be used for mushroom production. | 5 (2.5) | 179 (89.5) | 174 (87) |
| 23. | Processing of mushroom before the sale. | 9 (4.5) | 184 (92) | 175 (87.5) |

**Increase in Knowledge Level**

Pre-training and post-training scores were computed for all sub-components of mushroom production (Table 2). Initially, it was evident that participants had insufficient knowledge across all aspects of the training program. However, following the training sessions, there was a notable improvement in knowledge across all domains. Significant enhancements were observed in various sub-components, including understanding of the nutritive value, optimal growing conditions, mushroom types, suitable substrates, importance of casing, quality spawn production, harvesting techniques, marketing strategies, preservation methods, and mushroom recipes. The most remarkable increase in knowledge was seen in the "Different mushroom recipes" category, with a gain of 98.5%, followed by "Effect of Climatic condition" (90.5%) and "Government schemes for mushroom growers" (90%). Substantial knowledge gains were also noted in areas such as "Use of social media in Mushroom Cultivation" (92%), "Quick return in time" (90.5%), and "Suitable temperature for spawn production" (93%). Furthermore, it was observed that after the training, 80.5% of respondents demonstrated improved knowledge regarding "Preparation of compost," while 76% exhibited enhanced understanding of the "Importance of casing." Additionally, 87% of respondents showed increased awareness of the importance of using clean knives and gloves for mushroom production. These findings collectively suggest that participants successfully assimilated knowledge following exposure to the mushroom production training program, consistent with the findings reported by (Singh *et al.,* 2010).

**Conclusion**

In conclusion, the study highlights the significant knowledge gain achieved by participants following their exposure to training in mushroom production. Notably, mushroom production emerges as an enterprise that isn't heavily dependent on land availability, thereby enabling even landless farmers to augment their income through cultivation. The awareness and training provided in mushroom production facilitated income generation, nutrient supplementation, and lucrative marketing opportunities among the participants. This enhanced level of knowledge can be attributed to the extensive training conducted by the MRTC.

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