



Development of Mushroom hub in Sangrur (Punjab) through Farmer FIRST Programme

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Mushroom cultivation is a remunerative activity that has the potential for economic uplifting as well as promotes rural collectivism. Thus, under the Farmer FIRST Programme, mushroom cultivation was introduced in the two project villages in Punjab (2017–18). Total 55 farming families were trained for mushroom cultivation and provided with required information time to time using various extension methodologies. Efforts of PAU team gave fruitful results and currently a number of farming families are practising button mushroom cultivation in the project villages. Farmers fetched an average price of ₹88/kg in 2021–22. Net returns from mushroom cultivation are increasing every year with an average of ₹87420 per unit and even one of the farmers earned profit of ₹2.2 lakh per unit in 2021–22 from button mushroom cultivation. These farmers also served as the opinion leader for other farmers. One of progressive farmer, Dara Singh received more than 200 phone calls from other farmers and visited 25 farmers for guiding them regarding mushroom cultivation in 2021–22. Thus, it confirmed the effectiveness of the Farmer FIRST programme in upliftment of farmers and developing the project area as the hub of mushroom cultivation.

Keywords: Button mushroom, Economic, Mushroom, Opinion leader

AGRICULTURE is the backbone of the Punjab's economy. It has set new records for the yield and production of various field crops. Assured irrigation, quality seed of improved varieties and assured marketing of certain crops at MSP are some of the major factors for agriculture development in the state. But all of these factors have also led to monoculture which is clearly visible from the prevalence of rice-wheat crop rotation. Sangrur district of Punjab is a classic example where all of these events are evident. The sad part of the story is that the rice-wheat monoculture has led to numerous problems related to production, sustainability, ecology, environmental pollution etc. This rotation produces a huge volume of biomass in the shape of crop residue leads to the farm fires. On one hand, due to stagnated yield, the income of the farmers has not increased and on the other hand, they are facing great difficulty in managing the load of crop residue.

Farmer FIRST programme (FFP) was initiated to find solutions for such problems on a limited basis and replicated it for the masses. In Punjab, this project is operational in the villages Chatha Nanhera and Taranji Khera of district Sangrur. These villages had more than 85% of the area under wheat-paddy rotation. So it was a challenge for the project team to give an intervention

which is not only helping in managing the crop residue but also will enhance the income of the farmers. So after brainstorming by the team members, one possible solution was evolved in the shape of mushroom cultivation. This enterprise does not require much land and capital resource. But farmers and farmwomen had to be trained in these enterprises to successfully undertake this venture. The raw material used for the composting or growing material is the simply crop residue of wheat and paddy. Therefore, keeping in view these advantages, mushroom cultivation was introduced in the adopted villages under Farmer FIRST Programme. Initially, farmers were unaware of mushroom cultivation and due to lack of awareness, they were also reluctant to adopt this enterprise because they were of the thought that it is a complex technology. But the project team conducted group meetings with the potential farmers, cleared their doubts and motivated them to adopt mushroom cultivation as an enterprise. After the continuous efforts, a total of 55 farmers became ready to go for this enterprise. These 55 farmers were provided with training for the cultivation of Tropical mushrooms (*Calocybe indica* and *Volvariella volvacea*) and Temperate mushrooms (*Agaricus bisporus* and *Pleurotus* spp.). Mushroom spawn and demonstration bags were

supplied to the growers. Scientists of the team have regularly visited them to keep them in pace and not to leave in between. Their interest was kept intact by using various extension methodologies like exposure visits, method demonstrations and result demonstrations. They were also made aware that mushroom is a protein-rich diet. As the majority of the people are vegetarian or occasional meat consumers, the mushroom is a very good alternative to a non-veg diet and could be an important component of nutritional security.

At last, a total of 22 farmers got success in the cultivation of mushrooms and decided upscale this enterprise in future while other were still keeping this venture to fulfil domestic needs only. These mushroom growers were taken to an exposure visit to a commercial mushroom grower Bajwa Mushroom Farm, village Bhore Saida, Kurukshetra. At Bajwa Mushroom Farm they were apprised about commercial mushroom production and management of the commercial mushroom farm. They were also told about the potential markets and other marketing strategies like processing of mushrooms, cold storage etc. In this way, every possible strategy was used to make introduction and sustainability of this important agro-enterprise. Among these farmers, 10 farmers from both villages adopted the button mushroom cultivation on a commercial scale other and had adopted at household or for village level market. Button mushroom was preferred by the farmers due to its climatic suitability in winter season, other varieties such as Dhingri, Milki and Prali mushroom was adopted at small scale or for home consumption. The farm women were showed keen interest towards mushroom pickle preparation which would become another source of income for them, so training regarding value addition products such as pickle, powder and mushroom paste has been provided to them at Department of Food Science and Technology, PAU, Ludhiana. An exposure visit of the selected farmers was also conducted by the FFP team to the commercial farm of Hardeep Singh, Village Kakra, (Sangrur). Besides that, several trainings, exposure visits of the farmers were organized at PAU from time to time. Such visits would provide practical knowledge as well as discussion with the successful entrepreneur.

Economic upliftment through mushroom cultivation

Usually, farmers grow mushrooms in thatched hut (shed), which is made from the bamboos and paddy straw. Some of the farmers also cultivated mushrooms in a growing shed, usually a vacant room at their home or farm. On average, farmers were spending ₹28600 for the preparation of the shed for growing mushrooms. It involved the cost of bamboos, polythene sheets, wood logs to make beds etc. The cost of spawn was estimated to be ₹6780 per mushroom unit. All farmers purchased spawn from Dr HS Garcha Mushroom Laboratories, Department of Microbiology, Punjab Agricultural University, Ludhiana. Compost making involved the highest expenditure in the mushroom production process i.e. ₹37300 which included the cost of wheat

straw, fertilizers and cocopeat etc. The labour costs was ₹8600 for the preparation of compost. The cost of polythene bags for packaging and travel expenses were ₹5800. Other Miscellaneous costs such as electricity were approximately ₹4300. Thus, on a unit of mushrooms, farmers were spending about ₹91380.

They were having a large quantity of produce even after meeting the domestic and village level needs. The project team helped them to create linkages with the hotels, marriage palaces of nearby cities, and self-help groups where all of their produce has been absorbed at handsome prices. Regarding the return from button mushroom production, it was reported that farmers obtained an average yield of 2032 kg per unit of mushroom production and sold their produce in the nearby cities' markets. They fetched the average price of ₹88/kg leading to the net returns of ₹87420 per unit (Table 1).

Table 1. Returns from button mushroom production

Particular	Cost (₹)
Price (₹/kg)	88
Average yield (kg)	2032
Gross Returns	178800
Cost of production	91380
Net returns	87420
Benefit: Cost ratio	1.96:1
Total	91380

Pioneer of mushroom cultivation

Though many farmers are tasting success in this venture but some of them are worth mentioning. Young farmer Dara Singh (39) from village Chatha Nanhera (Sangrur) started small scale production of mushrooms at village level. He earned about ₹2000 daily from small mushroom production unit during the winter season. The journey from small scale farmer who followed traditional cropping pattern to mushroom grower started two years ago when he came in contact with the scientists working under Farmer FIRST Project and came to know about the idea of mushroom production. The basic training for the mushroom production started with team of scientists of PAU, Ludhiana at village level. FFP team provided him basic training, mushroom spawn and conducted demonstration at his field. This further intensified his desire to start the venture and then he visited University for five-days training course on mushroom production. After attaining the proper training from the University, he started preparing his own compost and then mushroom production. The first harvesting of mushroom occurred during December 2018 and he generated additional income of ₹60000/- from 30 quintal compost within two months of starting mushroom cultivation. In the year 2021–22, he fetched the maximum net profit (₹2.2 lakh per unit) among mushroom growers.

With the help of his family, he developed a low-cost technology by raising a thatched house structure for growing mushroom. This indigenous technique not



PAU scientist providing training for compost making



Visit of Nodal officer (Mushroom), Punjab to the Mushroom Farms under FFP



Opinion Leader Dara Singh disseminating knowledge

only decreased the cost of production but also enhanced the growing period as the temperature inside these houses remain low. The new technique has not only helped unemployed rural youth in adopting mushroom cultivation for self-employment but also to marginal farmers to adopt mushroom farming as an allied activity to raise their income. He is very happy from the daily income getting from mushroom apart from other crops and also inspiring other farmers of Chatha village to start subsidiary enterprises along with farming. Despite not making a heavy investment and too much labour, he started making good income and his success is motivating fellow villagers to follow the path and cultivate mushrooms. Earlier he was suspicious about marketing of glut produce. The project team linked him to different hotels, restaurants, marriage palaces and local vendors of nearby cities to do direct marketing. Now consumers have started recognizing him and he is getting good orders. He also supplies mushroom in various social functions of the area. He is having plans of expanding his unit and is going for direct marketing and

value addition for the produce. Further he is planning to contact the canning unit for export of the produce.

Dissemination through opinion leaders

Dara Singh, is now guiding other farmers regarding mushroom cultivation. He visited 25 mushroom farmers to guide them regarding mushroom cultivation. Further, he uses social media platforms such as Whatsapp, youtube, and facebook for information dissemination. Other farmers regularly visit his farms to get the information and see the actual performance of the mushroom cultivation. Thus, this farmer is popularizing the mushroom cultivation enterprise through the farmer-to-farmer extension model.

SUMMARY

Mushroom cultivation is an occupation that has potential to uplift the economic status of the farmers without the need of heavy capital investment but farmers are not harnessing its full potential due to lack of awareness and technical know-how. FFP team popularized the mushroom cultivation enterprise among the farmers in the project villages of Sangrur (Punjab). With the continuous efforts of PAU, Ludhiana scientists, a number of farmers have adopted mushroom cultivation. Findings clearly shows that mushroom farmers are generating a remunerative additional income from the venture without investing much money. A large number of farmers in such proximal area transformed the villages into the hub of mushroom cultivation, which is capable of disseminating the technology to other area. Pioneer farmers from the project villages are also extending the knowledge and experience to other farmers through various mediums. Overall, FFP has proved effective in livelihood upliftment of the farmers and performed effectively to develop the farmer-to-farmer extension model by building the capacity of farmers as the opinion leaders.



A glimpse of button mushroom produce ready for packaging

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