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Research Article

Transfer of mushroom farming technology as one of the livelihoods generating activity identified in rural Haryana

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SUMMARY : Though the production of edible mushroom has been increased by several folds in the state of Haryana during the last three decade, it is yet to attend prime position in the national scenario either in production or in number of farms. However, huge publicity through media and efforts made by Govt., Non Govt. organizations, Univ., Dept. of Horticulture and Haryana Agro's have created much interest among the farmers to a significant extent in the mushroom farming technology and its acceptance as a means of livelihood generation. Training is considered as a potent tool to equip a person enabling one to deliver the goods in a better way. Krishi Vigyan Kendra's established in Ambala district are playing a significant role in economic empowerment particularly of small farmers and landless laborers by organizing skill oriented training and establishment of small enterprises which in turn would improve the quality of life of rural families. Among them mushroom farming has been indentified as a ideal profitable enterprise since per unit productivity of mushroom is several folds high than any other crop. Besides generating income, it also supplements the daily diet which is generally protein deficient in rural areas, among the various factors influencing mushroom production. The climate factors also play a significant role in economic farming. The other factors besides availability of technical know now, regular contact with the farmers as well as socio-economic status of the farmers have been found to have positive influence on acceptance of the new technology. The study also aimed at analyzing the constraints, problems, remedies and influence of other factors in adopting the technology by the farmers.

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BACKGROUND AND OBJECTIVES

The necessity of transfer of research findings to the farmers was felt and emphasized on several occasions. Several extension programmes and approaches have been initiated by the ICAR, New Delhi. The overall objective of these programmes were to help farming community in adopting the superior research findings so that the gap between what is achieved on research stations and at farmers farms could be brought at zero level or minimized. Krishi Vigyan Kendra's established in Ambala district of Haryana are playing a significant role in economic empowerment of landless labourers and unemployed youth of the district by organizing skill oriented trainings and establishment of small enterprises which in turn would improve the quality of life of rural families. Though these centres are arranging various vocations and short training courses for the youth and small farmers and farm women of the district but mushroom farming has been identified as a most profitable enterprise since per unit productivity of mushroom is several folds high than any other crop. The enterprise also gives self-employment opportunity to the rural folks as well (Madan, 1997).

Besides their nutritional value, the way they are cultivated today is equally important. Their indoor cultivation utilizing the vertical space is one singular advantage in view of the increasing pressure on agriculture land due to fast expanding civilization and population growth. Secondly they can be cultivated on a wide variety of cheap and

waste materials including agricultural bye-products and wastes. Their cultivation under controlled conditions permit rich harvest during successive cropping free from the vagaries of weather. In fact with their excellent capacity to transform the cellulosics into valuable proteins , they offer promising scope of meeting the world wide food shortage for the rapidly increasing population at an almost 2 lakh peoples per day (Mahapatra *et al.*, 1977). Keeping in view of the productivity, profitability, suitability and nutritive and medicinal value of the mushroom , the studies were therefore undertaken to identify the suitable enterprise which can lead to integrate rural development by increasing the income and self-employment opportunity.

RESOURCES AND METHODS

The present study was carried out in Ambala district of Haryana state. Data were collected from the six blocks of Ambala district *viz.*, Ambala-1 , Ambala-II, Saha, Brara , Sehzadpur and Nariangarh using structured questionnaire from 20 mushroom trainees from each block covering 50 villages of the district. Thus the total sample size comprised of 120 respondents related to mushroom was purposively selected for the study. The respondents were mainly those who had received training , gained knowledge and upgraded their skill from these centre. The knowledge inventory as per packages and practices of mushroom cultivation was prepared to assess mushroom knowledge on a three point continuum and 0,1 and 2 scores were given for nil, partial and full knowledge respectively. Total scores obtained were divided into three categories of high, medium and low. Mean knowledge scores and gaps for all these aspects were calculated to identify the training needs. Interview schedule was developed considering the objective and the respondents were personally interviewed for getting their response. Coefficient and multiple regression design was used for analysis of data. The constraints technological gap/ problems, remedies and economic analysis of successful mushroom grower among the ex-trainee of the centre was also studied.

OBSERVATIONS AND ANALYSIS

The rate of adoption of mushroom cultivation technology is very low (Table 1). Mushroom cultivation technology is generated at research station in completly or semi controlled environment and in contrast the farmers cultivate it in natural or uncontrolled environment thus there are chances of failure. Hence the devised technology must be suited to the applicable environment. It is apparent from the data presented in Table 2 that these centres had organized 15 vocational training courses from 2005-10 in which 412 farmers /farm women participated but only 16 per cent farmers/farm women have opted this profession as an employment. The results obtained in our present study also clearly established the fact that the respondents showed a significant gain in knowledge when they were given training on mushroom farming aspects (Table 3). The significant results obtained seem to be due to instructional package used and the constant dialogue between the recipients and the facilitators. Though the lack of formal literacy acted as a barrier in the dissemination of scientific information, functional knowledge even though transmitted to the participants in simple language with the help of suitable media mix. The action research has provided scope for the trainees to see through the problem and get the solution right in the training situations because these centres have undertaken various activities related to mushroom cultivation.

Table 1 : Scenario of mushroom production in Haryana

Years	1998	1999	2000	2001	2002	2003	2004	2005	2010
Prod. (m. ton)	3000	3500	5000	6000	7000	7500	7000	7200	8055
No. of units	675	800	1000	1170	1300	1310	1277	1316	1350
Income (Lakhs)	600	700	1250	1620	21000	2250	1990	2370	2552
No. of family engaged	4725	5600	7000	8190	9100	9700	9247	9500	10000

Table 2: Impact of vocational trainings on mushroom production

Years	No. of course	No. of participants				Total	Percentage adoption
		M	F	M (SC/ST)	F (SC/ST)		
2005-06	2	24	12	6	3	45	20.0
2006-07	3	52	10	8	2	72	15.4
2007-08	3	150	5	10	2	167	14.2
2008-09	3	58	5	12	3	78	19.5
2009-10	5	45	3	10	2	60	11.2
Total	15	329	35	46	12	412	16.06

Table 3 : Knowledge gained by respondents through training exposure on mushroom cultivation

Sr. No.	Content	Mean scores		
		Before exposure	After exposure	't' values
1.	Type of mushroom	2.26	4.32	12.12
2.	Mushroom strain	1.48	2.95	5.22
3.	Time of cultivation	0.76	2.13	8.94
4.	Compost constituents	1.56	4.02	8.12
5.	Method of composting	1.26	3.16	17.22
6.	Casing type and its preparations	1.06	2.08	13.45
7.	Nutritional aspect	1.21	3.31	8.81
8.	Diseases and pests	1.24	2.02	9.23
9.	Management in mushroom houses	1.08	2.42	7.32
10.	Harvesting and packing	2.88	6.06	23.38

't' tab. 2.016 at 0.05 level of probability

The comprehensions of the trainees kept under sharp focus and they were monitored and repeated exposure were provided as and where necessary.

Activity undertaken:

- Training
- Demonstration
- Mushroom days
- Mushroom seminar
- Exhibition
- Mushroom Gyan Divas
- Visit to mushroom melas
- Exposure visits
- Radio talks
- Ex-trainee Sammelan
- Success stories
- Popular articles
- Establishing and monitoring of mushroom units.
- Popularization of low cost technology.

Identification of subsidiary enterprises:

- Availability of raw materials in abundance
- Rural unemployment in lean season.
- Small land holding.
- Need for regular additional income.
- Non-availability of mushroom.
- Good demand of mushroom.
- Proximity to the market.
- Nation future emphasis is on use of organic manure in the field crops and increase in net returns from agriculture.

Scope, suitability, utility and profitability of the mushroom farming:

- Converting ample organic residues into high quality food.
- Per unit productivity is several folds high than any other crop.
- Free from the vagaries of weather and other natural calamities.
- Increasing income and improving the nutrition at the household level.
- Mushroom are ideal food as they constitutes low calorie, low fat and sugar, rich in protein, vitamins, minerals, fibre content while starch and cholesterol are absent.

As far as mushroom production is concerned, Haryana is the leading mushroom growing state in India and the mushroom is presently being cultivated by seasonal growers under natural conditions by following low cost technology. At present more than ten thousand families are engaged in the profession and besides meetings their family nutritional requirement they have been producing 8055 metric tonne mushroom annually in the State (Table 1). The productivity of the mushroom in Haryana can further be accelerated if the farmers adopt recommended mushroom practices. Compost making , casing and crop management practices play a significant role in increasing the productivity of mushroom. Therefore, extension workers should make more efforts to transfer the latest technology at the farmer level by using appropriate methods to make them aware and monitor them to adopt improved practices.

Relationship between farmer's socio-psychological and economical traits in relation to mushroom cultivation:

The correlation coefficient ('r') values were worked out to know the association between personnel-socio-economic and psychological traits with regards to mushroom cultivation (Table 4). Education, mass media exposures, extension, contact, training received, annual income, occupation, economic motivation, scientific orientation and risk orientation were significantly correlated with their extent of adoption. This might be due to education and outside contact of the respondents leds to their extension of adoption of mushroom of farming. It implies that technology gaps of the respondents decreased with each unit of increase in these aspects. These results are in conformity with the findings as reported by Bhatia and Mohammed (2007) and Bhatia *et al.* (2010). The other independent variables such as age and land holdings had negative association with the mushroom production but not to the extent of significance.

Working on this aspect, the authors have also identified constraints/ problems encountered during the process of cultivation and suggested remedies there of Further more the extension workers should visit the mushroom houses/farms

Table 4 : Correlation co-efficient of independent variables with the attitude of variables of mushroom grower

Sr. No.	Characteristics (independent variables)	Correlation co-efficient ("r" value)
1.	Personal characteristics	
	Age	0.0390
	Education	0.1912*
	Family education	0.2140*
2.	Socio-communication characteristics	
	Mass media exposures	0.4553*
	Extension contact	0.4566*
	Training received	0.5860*
3.	Economic characteristics	
	Land holding	0.0969
	Annual income	0.2157*
	Occupation	0.2424*
4.	Psychological characteristics	
	Economic motivation	0.3585*
	Scientific orientation	0.6853*
	Risk orientation	0.7387*

* indicates significance of value at P= 0.05

regularly to provide the technical know how. However, even under the existing circumstances if the following gaps are filled up there would go a long way in accelerating the pace of mushroom development in Haryana.

Problems faced by the mushroom growers:

- Financial constraints
- Inefficient arrangements
- Over dependence on intermediaries
- Low ability to bear risk
- Lack of education
- Poor skill development
- Low need for achievement
- Absence of ambition for achievement
- Highly perishable commodity
- Low market price of mushroom in peak reason

Remedies proposed:

- Farmers participatory approach
- Financial cell
- Improvement in system of mushroom project formulation
- Marketing cooperation
- Availability of raw materials at subsidized rates
- Education and awareness
- Training of extension personnel
- Promotion of agro-processing units for value added products

The monetary gain is the biggest incentive for a farmers who born in debt, live in debt and die in debt. The integrated farming system approach has ability to maximize return from various enterprises and thus it seems to be effective tools of transfer of mushroom cultivation technology (Rangaswamy *et al.,* 1995). The transfer of technology work can be further speeded up through modern information technology such as view data, tele text, micro computers, network system etc and almost all the weakness of transfer of technology can be corrected through farmer participatory approach (Sagar and Gautam, 2002). The working experiences with large number of growers we have been able to asses the virtues of mushroom cultivation. The result and outcome further substantiated that due to adoption of this enterprise their income, standard of living and position in the society have also improved a lot (Table 5). Dr. M.S. Swaminathan has rightly said that mushroom has the potential for increasing and improving the nutrition at the household level in India (Madan, 1997). Mushroom cultivation is not only of economic importance but also important role to play in integrated rural development programmes by increasing income and self-employment opportunity among the rural masses. The enterprise is also eco-friendly. Used compost and straw may again be utilized as organic manure, animal feed and for amendment of soil . Waste and barren land can be converted to mushroom farms. Mushroom can be even cultivated by landless labourers as it is cultivated indoors and in additional small floor areas, the vertical space can also be utilized judiciously. Conclusively it is established from the study and foregoing discussion that mushroom farming is a profitable enterprise and it is one of the livelihood generating activities in rural Haryana. Simultaneously it is one of the major objectives of all government in initiatives on rural development to improve the standard of living of those living in rural areas.

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REFERENCES

Bhatia, J.N., Ahuja, S. and Thakral, S.K. (2010). Empowering rural women through mushroom farming – A profitable enterprises. In : Santosh Tikkoo (Eds.) *Professionalism in Home Science*. Academic Excellence Delhi. pp. 503-510.

Bhatia , J.N. and Mohammed , S. (2007). Technological gaps in adoption of improved mushroom cultivation practices in Haryana. Proc. National Conf. on Environment and livelihood security through resources management in Northern India held at Chandigarh form 29 to 31st Oct. 2007.

Madan, M. (1997). Role of mushroom cultivation in rural development. In: Advances in biological and production (Rai, R.D., B.L. and Verma, R.L. eds). Proc. Indian Mushroom Conference, NRCM, SOLAN, H.P. (India).

Mahapatra, S.C., Das, N. and Chatopadhyay, R.N. (1997). Transfer of mushroom farming technology as one of the livelihood generating activities in rural areas and its adoption by the farmers of south west Bengal. Paper presented in National Mushroom Conference being held at NRCM, SOLAN, H.P. (India).

Rangaswamy, A. Prem Sekhar and Venketaswamy (1995). Integrated farming system for garden lands. *Madras agric. J.*, **82**(6-8): 464-466.

Sagar, M.P. and Gautam Yogesh (2002). Recent approaches to transfer of mushroom cultivation technology. In: *Recent advances in the cultivation technology of edible mushrooms* (R.N. Verma and B.Vijay, eds.) NRCM, SOLAN. pp. 283-295.