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Mushroom cultivation as an income generating activity: women self help group in Himachal Pradesh

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Abstract

In the ninth five-year plan of government of India, empowerment of women through self-help groups has been recognized as one of the important points of the economy of this country. The main objective of the self help groups is to sustain under the present agricultural scenario and to utilize the resources for gainful ventures. Mushroom cultivation is one of such ventures which could easily be adopted by the farmwomen belonging to any strata of the society with little bit of training and technical guidance. A self help group of farmwomen was established under the All India Coordinated Research Project (Home Science) of Indian Council of Agricultural Research in Padhiarkhar village of district Kangra, Himachal Pradesh. This group was motivated to adopt dhingri cultivation, a type of mushroom (*Pleurotus ostreatus*), as an entrepreneur in consultation with subject matter specialists of the university. Training was imparted to the group and then cultivation of dhingri was initiated by twelve farmwomen during the year 2005 -2006. The experiences gained by this group in adopting mushroom cultivation as an entrepreneur with respect to production, consumption, marketing, economics of its cultivation and constraints experienced were recorded.

Key words: Income generation, self-help group, mushroom, training.

Introduction

The small enterprises in India have been proved to be an engine of growth of the economy with 39 percent of India's gross industrial production. It is estimated that with over 11.8 million units in the country, the small sector provides employment to more than 28.1 million people. Recognizing the importance of this employment, an intensive segment of the economy, the empowerment of women through organization of Self Help Groups was one of the nine primary objectives of the ninth five year plan (Dasgupta, 2005).

The self help groups provide credit, and also empower women socially and economically (Ramchandran and Seilan, 2005). Their main objective is to sustain under the present agricultural scenario and to utilize the resources for gainful ventures. Mushroom cultivation is one such venture which could easily be adopted by farmwomen belonging to any strata of the society.

Mainly three types of edible mushrooms are cultivated in India on commercial basis. These are paddy straw mushroom (*Volvariella volvacea*), Oyster or Dhingri mushroom (*Pleurotus ostreatus*) and White button mushroom (*Agaricus biosporus*). Their cultivation requires no land and can be grown in houses/small huts with the utilization of agricultural waste products. Moreover, the edible mushroom can make a significant contribution in solving the problems of malnutrition and deficiency diseases as it contains a high percentage of protein, some vitamins and mineral salts required by the human body such as calcium, phosphorus, iron, potassium and copper (Chakraborti, 2001).They are richer in folic acid which can prevent and cure anemia.

Material and Methods

Keeping in mind the importance of mushrooms, the department of Home Science Extension Education, College of Home Science organized trainings on dhingri cultivation (*Pleurotus ostreatus*) for the farmwomen of self help group established in Padhiarkhar village of district Kangra, Himachal Pradesh adopted under All India Coordinated Research Project in Home Science. The training was imparted with the help of subject matter specialists of the university. After attending the training a group of twelve ladies established their dhingri units either for home consumption or for local marketing. Three crops were grown by them during the year 2005-06 (Sep-May) which has been reported in the present paper.

Results and Discussion

Table 1 illustrates the socio-economic profile of the dhingri growers. It was observed from the table that majority of the dhingri growers (83.33%) were married, belonged to backward caste (83.33%) and hail from joint families (66.67%), having mixed type (58.33%) of houses, followed by pucca (25.00%) and kacha (16.67%)

houses. Table further revealed that almost an equal p oportion of the growers i.e. nearly 40.00 percent had their education up to middle or matriculation. As regards occupation of their husband, 60.00 percent of them were wives of daily paid labourers while husbands of the remaining married growers were policeman, peon, driver or army man. Exactly 50.00 percent of them possessed land up to 1 acres , followed by 41.67 percent growers who own up to 2 acres of land.

Table 1. Socio-economic profile of the dhingri growers

N=12

Variable	Categories	Number (%)
Marital status	Married	10 (83.33)
	Widow	2(16.67)
Caste	Backward caste	10 (83.33)
	Schedule tribe/caste	2 (16.67)
Family type	Joint	8 (66.67)
	Nuclear	4 (33.33)
Family size	Small (upto 4 members)	4 (33.33)
	Medium (5-7 members)	7 (58.33)
	Large(> 7 members)	1 (8.34)
Type of house	Kuchha	2 (16.67)
	Pucca	3 (25.00)
	Mixed	7 (58.33)
Education	Illiterate	2 (16.67)
	Up to middle	5 (41.67)
	Up to senior secondary	4 (33.33)
	Graduate	1 (8.33)
Occupation of husband	Labourer	6 (60.00)
	Policeman	1 (10.00
	Driver	1 (10.00)
	Peon	1 (10.00)
	Army man	1 (10.00)
Land holding	<1 Acre	1 (8.33)
	Upto 1 Acre	6 (50.00)
	Upto 2 Acre	5 (41.67)

Table 2 presents information regarding the number of crops and bags grown by each grower. In the study period, three crops of dhingri were cultivated in which maximum number of bags (92) were kept by grower no. VI, followed by grower No. I, V and III who grew dhingri on 85, 75 and 55 bags, respectively.

Table 2. Crops grown and number of bags kept by the growers

Grower Number	No. of crops grown	No of bags kept per crop			Total no. of bags
		1st	2nd	3rd	
I	3	16	36	33	85
II	1	15	-	-	15
III	2	20	35	-	55
IV	2	5	10	-	15
V	3	5	35	35	75
VI	3	20	25	47	92
VII	1	5	-	-	5
VIII	1	10	-	-	10
IX	2	20	5	-	25
X	1	15	-	-	15
XI	1	15	-	-	15
XII	1	10	-	-	10

The other remaining growers worked on little number of bags ranging from 10-25. Further perusal of data in the table revealed that the 1st crop was cultivated by all the respondents but during 2nd and 3rd crop period most of them left out this job. Only three growers i.e. No. I, V, and VI have sustained the task of dhingri cultivation till last crop season. This may be due to the fact that after receiving training everybody took up the task of dhingri cultivation out of curiosity but it was continued by only those growers who had interest , were needy or/and are financially weak. In the present study grower No. I is a widow having two children so it was her necessity to grow dhingri for earning money. Similarly grower No. V and VI also adopted dhingri cultivation because they had interest, proper space availability and above all it's a good source of income supplementation.

The data pertaining to gross economics of dhingri growers has been presented in Table 3. It can be observed from the table that the expenditure on cultivation of dhingri varied according to the number of bags kept by the growers. This expenditure has been calculated by summing up the amount spent on purchase of spawn, polythene bags and nylon strings. Paddy straw was used as a substrate which they procured from their farms or purchased if not available with them. Similarly bamboo was also available locally to prepare racks to keep dhingri bags. As regards total production of dhingri, if we critically compare the production it is evident from the figures that grower no. VI has kept more number of bags than the grower no. I but still the quantity of produce from her bags is less (42 kg) than the grower No. I (55.5 kg).

Table 3. Gross economics of dhingri growers

Grower Number	No. of bags	Total expenditure (Rs.)	Total* Production(kg)	Rate/kg (Rs.)	Total earnings (Rs.)	Profit (Rs.)
I	85	800	55.5	75	4162.50	3362.5
II	15	126	10.0	60	600.00	474
III	55	430	29.0	75	2175.00	1745
IV	15	142	10.0	60	600.00	458
V	75	790	32.5	75	2437.00	1647
VI	92	820	42.0	75	3150.00	2330
VII**	5	49	1.0	75	75.00	26
VIII	10	93	8.0	75	600.00	507
IX	25	235	15.0	75	1125.00	890
X	15	142	7.0	75	525.00	383
XI	15	142	8.0	75	600.00	458
XII	10	93	5.6	60	336.00	243

*Total production=Mushroom consumed in home + sold in market
** Discontinued the dhingri cultivation in between the crop season

The main cause for this reduction is growth of mites in the substrate which spoiled most of her bags.

Data further revealed that the growers sold the produce at the rate of Rs. 60 and Rs. 75 per kg. This disparity in the rates is because of the reason that some of the ladies sold the produce through direct marketing thus fetch higher rates whereas the growers who sold through middleman or locally in the village could get an amount of Rs. 60 per kg. This variation in rates affected the total income earned as well as the amount sold because some ladies preferred to consume the produce at home instead of selling at less price. It is worth mentioning here that grower No. I is a very sincere and hard working lady who never compromised for the rate of selling dhingri. This may be one of the reasons that she earned maximum profit among all the growers. The last column in the table depicting profit gained by the growers indicated that these growers (three in number) who continued dhingri cultivation up till the last crop are the real dhingri growers and gained profit of Rs. 3362.50 (grower No. I), Rs. 2330/- (grower No. VI) and Rs. 1647/- (grower No. V).

The perusal of data in Table 4 depict the amount of dhingri consumed, sold and the actual income earned by the growers. Figures in the table show that nevertheless the growers had sold the dhingri but a large proportion of the produce was consumed at home by majority of the respondents. Out of the total twelve families, three of them did not sell the produce at all and consumed it at home. The main reasons for consuming the dhingri at home may be due to the preference for the crop due to its peculiar taste, newness and its expensiveness.

Table 4. Amount of mushrooms consumed in home and sold in the market and actual saving

Grower Number	Total Expenditure	Total production		Rate (Rs)	Cash in hand (Rs.)	Actual saving (Rs.)
		Consumed in home (kg)	Sold (kg)			
I	800	18.0	37.5	75	2812.5	2012.5
II	126	5.0	5.0	60	300	174
III	430	11.5	17.5	75	1312	882
IV	142	6.0	4.0	60	240	98
V	790	13.0	19.5	75	1462	672
VI	820	8.5	33.5	75	2512	1692
VII	49	1.0	-	75	-	-
VIII	93	8.0	-	75	-	-
IX	235	5.0	10.0	75	750	515
X	142	4.0	3.0	75	225	83
XI	142	8.0	-	75	-	-
XII	93	4.0	1.6	60	93	-

In other words we can say that being a vegetable, dhingri is bit costlier than other vegetables which can be easily consumed if one grows it at home. Problem of marketing was also reported to be one of the reasons for home consumption as it has low shelf life. If we observe

the earlier tables , it was found that only three growers continued dhingri cultivation uptill last crop, however, along with them one more grower i.e. No. III who discontinued due to some family problems was still able to fetch a good amount from this activity due to her hard work and interest in this particular work. Thus, these four growers i.e. grower No. I (Rs.2812.5/-), No.III (Rs.1312/-), No. V (Rs.1462/-)and grower No.VI (Rs. 2512/-) earned more than one or two thousand rupees while the other remaining had earned up to Rs. 300. The growers sold the produce in the village or in near by shops but still their actual saving from three crops of dhingri is quite admirable which is visible from the figures. If we observe the actual saving (cash in hand - total expenditure) of the growers, it was found that grower No. I had Rs. 2012.50/- in her hand followed by grower No. VI who earned Rs. 1692/-. So it can be predicted that if they can save such a good amount from three crops only, they can become successful entrepreneurs in this field by their hard work.

Oyster/dhingri mushroom is nutritious, palatable and delicious food for all types of people. It contains 3.7 percent protein which is higher than any other vegetable protein. Table 5 explains the frequency of dhingri consumption by each family in given period of time and the amount of protein added to their diet. The number of days varies because of the variation in the number of crops grown by individual families. It can be observed from the table that after adopting the practice of dhingri cultivation, the family members were consuming 200-400 g of dhingri per serving. Most frequent consumption was observed in the family of grower No. V who consumed dhingri for 65 times in a period of 260 days after an interval of 4 days which might not have been possible otherwise.

Table further explains that only dhingri consumption supplemented up to 666 g of protein in the diet of the grower's families. Thus, it can be concluded that an attempt by the farmwomen to start dhingri cultivation as a small enterprise with total expenditure of Rs. 49/- to 820/- resulted in an addition of 37- 666 g of protein into the diet of each family, along with an income supplement of Rs. 83/- to Rs.2012.50 /-

Constraints faced by the dhingri growers

Large scale adoption of innovation is an essential feature of agricultural development. However, agricultural innovation/practice /technology is not generally accepted by farmers as a whole due to certain constraints.

Table 5. Frequency of dhingri mushrooms consumption and amount of protein added to the diet of the families

Grower Number	Consumed in home (kg)	Period (days)	Frequency of consumption (days)	Average per serving consumption (g)	Interval (days)	Protein added to diet of the family (g)
I	18.0	260	60	300	4.3	666.0
II	5.0	180	25	200	7.2	185.0
III	11.5	180	29	400	6.2	425.5
IV	6.0	180	20	300	9	222.0
V	13.0	260	65	200	4	481.0
VI	8.5	260	37	230	7.0	314.2
VII	1.0	30	4	250	5.0	37.0
VIII	8.0	97	20	400	4.8	296.0
IX	5.0	180	25	200	7.2	185.0
X	4.0	90	16	250	9.1	148.0
XI	8.0	112	27	300	9.0	296.0
XII	4.0	145	16	250	9.0	148.0

100g of fresh dhingri mushroom gives 3.7 g of protein

Technical constraints

It was observed in the present investigation that out of thirty ladies who attended training, twelve of them were ready to buy the seed/ spawn on the same day of training. The reasons cited by them for quick acceptability of dhingri as compared to button mushroom cultivation were availability of substrate (paddy) in the house itself, easy to cultivate, moderate initial investment and nominal cost of spawn. It is added that majority of the above said respondents had already been exposed to cultivation of white button

mushrooms. Beetz and Kustudia (2004) also reported that dhingri /oyster mushrooms are easier to grow than many of the other species, and they can be grown on a small scale with a moderate initial investment.

Besides these advantages, the farmwomen faced some constraints while cultivating dhingri. Some of the growers found mites in between the layers of substrate which was hindering the growth of dhingri. This was due to the fact that unintentionally they had used infected substrate though they were warned against it in the training. The subject matter specialist recommended using the substrate dried under roof as the substrate dried in open may have chances of exposure to rain, fog etc. which can lead to occurrence of mites in dhingri bags. Another reason for mite formation could be improper sterilization of substrate. Stamets (2001) stated that the substrate on which the mushrooms will fruit must be sterilized and pasteurized in order to destroy any fungal or bacterial activity. Due to unhygienic conditions and improper space, the problem of flies was also observed. Besides this regular technical know how had to be provided to the growers as and when required for petty constraints.

Space availability was the major problem for most of the growers as they had kutcha houses and they did not have enough resources to create pucca/required space. Kutcha floor may lead to spoilage of the crop due to standing water or infestation by rodents etc. Families who had pucca houses did not face this problem.

It is worth mentioning that majority of the problems faced by the farmwomen regarding dhingri cultivation were technical in nature. As practice makes a person perfect, they were also confident enough to continue this activity when they grew crop for the second time. They considered all the precautions and cultivated the crop at their own without any assistance.

Careless/ casual attitude of dhingri growers

The growth of this crop is very fast and the initial investment is also less. Thus some growers gave less value to the crop till marketing of the produce. One of the growers carelessly threw their dhingri bags on heap of garbage as they had to vacate the room due to some family need. They did not even bother to handover their bags to some other grower.

Family dispute also became a hindrance in dhingri cultivation. Due to clash in views of the daughter- in -law and mother–in-law, the dhingri bags were neglected.

Misconceptions regarding dhingri cultivation

Some of the growers discontinued the practice of dhingri cultivation as there is a misconception among them that mushroom causes health hazards and some regard it as a variety of meat thus being vegetarian they do not feel like growing dhingri. Shape of dhingri is also one of the reasons for non acceptability of this vegetable. Bad omen is also associated with its cultivation as rural people believe that it leads to unhealthy atmosphere like quarrel or ill-health in the family. Suharban *et al.* (1991) reported that some unfounded impressions affected the demand of mushrooms in the local as well as distant markets and thus the growers were not in a position to expand their activities in the field of mushroom cultivation.

Problem of marketing

Marketing is the most important consideration of all. All the growers complained of lack of regular marketing facilities. As majority of the growers were small producers thus they were facing problem in selling the crop on small scale.

Suggestions for promoting dhingri cultivation on commercial basis

- ✓ Being highly perishable crop, dhingri requires quick disposal. Therefore, marketing facility be made available to the growers.
- ✓ Various small dhingri cultivation units should be organized into a cooperative so that the growers may not face any problem in selling their produce or a mushroom collection centre may be created (Anonymous, 2007).
- ✓ The growers can contact restaurants /caterers / Marriage palaces/ *sabji mandi* for sale of the produce and local grocery stores are another potential buyer of fresh mushrooms.
- ✓ Post harvest technology of mushroom should be popularized among the growers for value addition to the crop.

Conclusion

It can be concluded that:

- An income generating activity i.e. dhingri cultivation has not only added nutrition to the diet of the dhingri growing families but also supplemented their family income too.
- It is a successful venture but needs to be organized.

- General masses need to be made aware of its nutritive value.
- Being organic in nature thus needs to be promoted.

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