Original Research Article

Mushrooms contribution to farm income and the Socio-economic conditions analysis of ~~mushrooms~~ the growers

ABSTRACT

It is very important to adopt new technology for agricultural productivity and development. Farmers' socioeconomic status influenced their decision to adopt technology. It is therefore important to study the social status of the farmer. The analysis was based on data based on survey of 60 farm households. Results of the study revealed that literacy rate was found 88.25 per cent with literacy index of 2.69. The average size of land holding on overall category basis was found 0.82 hectares out of which 86.02 per cent operational holding. Mushroom production contributed maximum in total farm income in case of large farmer (72.18%). At overall its contribution was found 49.42 per cent to the total farm income

Keywords Mushroom Growers, Shimla, Socio- economics,

INTRODUCTION

Mushrooms have been recognized by Food and Agriculture Organization (FAO) as food item contributing to the protein nutrient to the diet of developing countries like India, where there is heavy dependence on cereal diets. The significant feature of mushroom is that this nutritious and tasteful food is cultivated entirely from waste products and converts a wide spectrum of agricultural and industrial waste into substrate on which the growth of mushroom is supported. It is cultivated mainly on hills, as it requires low temperature for its growth; however with the advent of modern cultivation technology it is now possible to cultivate this mushroom seasonally under uncontrolled conditions and throughout the year by employing environmentally controlled conditions.

Button mushroom (*Agaricus bisporus*) is the most popular variety, still dominates the Indian and international markets. It contributes about 90 per cent of total country's production as against its global share of about 40 per cent. (Mehta BK *et al.*). White Button mushroom is mainly cultivated in North India both under controlled and natural conditions. During winter season hundreds of seasonal growers do button mushroom production particularly in Northern States targeting big cities like Delhi, Chandigarh (Singh and Kamal, 2016)

MATERIAL AND METHODS

Selection of study area

The main objective of the study was to examine the socio-economics conditions of mushroom grower and mushrooms contribution to their overall income and it attempts to describe the various facets of mushroom farming in study area. The study was conducted in Shimla district of Himachal Pradesh as this district is the second largest producer of mushroom in the State**.**

Selection of sample

A complete list of mushroom growers was prepared with the help of Department of Horticulture, Govt. of Himachal Pradesh and from the supplier of spawn. A sample of 60 mushroom growers was drawn by using simple random technique from the list of mushroom growers for the collection of data.

Stratification of sample households

For the construction of strata, cumulative cube root frequency method was used. For the analysis of data all the mushroom growers were classified into three categories on the basis of number of bag, viz., Small Category (≤ 600), Medium Category (601-1200) and Large Category (>1200). The distribution of the sampled mushroom growers according to their number of bags. It has been found that 45 per cent of farmers were small farmers and average bags per growers were 316 bags, who owned 0.63 hectare of land holding, 38.33 per cent of farmers were medium farmer with average of 952 bags per farm and owned 1.03 hectare of average land holding whereas 16.67 per cent of farmers were large mushroom growers with an average of 2910 bags and owned an average of 0.86 hectare of land holding.

Table 1.1: Farm category wise distribution of sampled households in study area

Category of farmers	No. of Mushroom Bags	No of farmers	Percentage of farmers	Average No of bags	Average land holding size (Ha)
Small	≤600	27	45.00	316	0.63
Medium	601-1200	23	38.33	952	1.03
Large	>1200	10	16.67	2910	0.86
Total		60	100.00	992	0.82

Analytical tools

The collected data were compiled and analyzed by using simple tabular method. The results have been presented by working out averages and percentages. Following formulae/expression were used for estimation of different parameters:

Tabular analysis

Tabular presentation was adopted to examine socio-economic status of the sample farmers like the sex ratio, literacy rate and index were calculated using the following formulae:

Sex ratio

Sex ratio represents the number of females per thousand males and was calculated for the total sampled households with the following formula:

$$\text{Sex Ratio} = \frac{\text{No.of females in a family}}{\text{No.of males}} \times 1000?$$

Literacy rate

Literacy is an important indicator judging the quality of human resource, it was calculated by deducting the population below five years of age (non-school going) from the total sampled population

$$\text{Literacy rate} = \frac{\text{Total no. of literate person}}{\text{Total population} - \text{population below 5 years}} \times 100$$

Literacy index

Literacy Index is calculated by sum of weighted value for literacy category **(**primary, middle, matric, senior secondary and graduate & above) to the number of persons to be literate

$$\text{Literacy index} = \frac{\sum W_i X_i}{\sum X_i}$$

Where,

W_i = Weights (0, 1,2,3,4 and 5) for illiterate, primary, middle, matric, secondary and graduate & above respectively.

X_i = Number of persons in respective category.

$$\text{Dependency ratio w. r. t. total workers} = \frac{\text{No. of dependents in a family}}{\text{Total workers}}$$

Cropping intensity

The cropping intensity has been worked out as the ratio of gross cropped area to the net sown area, expressed in percentage

$$\text{Cropping intensity (\%)} = \frac{\text{Gross cropped area}}{\text{Net sown area}} \times 100$$

RESULTS AND DISCUSSION

1. **Socio-economic characters of sampled farmers**

This section deals with various socioeconomic characteristics of mushroom growers which include their size and structure of family, educational and occupational status, etc.

a) Size and structure of family:

The size and structure of sampled households in the study area has been worked out and presented in Table 1.2. The perusal of table shows that nuclear family system was observed more prominent in the studied households. At overall level the average family size was found 5.26 persons per household of sampled mushroom growers. The number of females per thousand of

males ranged between 690 in case of large farmer to 1062 in medium farmer with an average of 897 females per thousand of male at overall level.

b) Age wise distribution of farmers

Age is considered as an important socio-economic factor which influences the decision making capacity of human being. Age also gives an idea with respect to the earning and learning capacity of a person. Hence, it has been undertaken to have an idea about the age pattern of mushroom grower's in the study areas which have been presented in Table 1.2. The average age of all the mushroom farmers was 44. It reveals that majority of grower were in their young age and tends to follow the new age technologies to run their enterprises.

c) Literacy status

Education is an important factor in the development process. Thus, analysis of general educational status of sampled farm families and head was analyzed and presented in Table 1.2. All the sampled mushroom grower were found to be literate. More than 20 per cent growers were graduate, 23.33 per cent were having education up to senior secondary level and 20 per cent were matriculate.

Table 1.2: Socio-economic characteristics of sample mushroom growers

	Particulars	Small	Medium	Large	Overall
1. Size and structure of family	Number of the Family	27	23	10	60
	Joint family (%)	7.41	21.74	10	13.33
	Nuclear family (%)	92.6	78.26	90	86.67
	Average size of family	4.90	5.82	4.90	5.26
	sex ratio	833	1062	690	897
2. Age group of respondent	Below 30 Years	7.41	26.09	-	13.33
	30-40 years	33.3	30.43	40.00	33.33
	40 - 50 Years	25.9	17.39	40.00	25.00
	50 above	33.3	26.09	20.00	28.33
	Average age of respondent	46	41	45	44
3. Education	Primary	25.9	4.35	-	13.33
	Middle	25.9	13.04	30.00	21.67
	Metric	18.5	21.74	20.00	20.00
	Senior secondary	14.8	39.13	10.00	23.33
	Graduate	14.8	21.74	40.00	21.67
	Literacy rate (%)	88.8	85.27	93.62	88.25
	Literacy index	2.66	2.58	3.00	2.69
4. Occupational Pattern	Agriculture	85.6	85.42	85.00	85.34
	Service	8.25	9.38	5.00	8.23
	Business	6.19	5.21	10.00	6.43
	Average workers (No.)	3.60	4.17	4.00	3.89
5.Work	Average No. of workers	3.60	4.17	4.00	3.89

force		(73.50)	(71.64)	(81.63)	(74.14)
	Average No. of dependents	1.30	1.65	0.9	1.37
		(26.50)	(28.36)	(18.37)	(25.86)
	Average family size (No.)	4.90	5.82	4.90	5.26
		(100.00)	(100.00)	(100.00)	(100.00)
	Dependency ratio w. r. t. Total workers	0.36	0.40	0.23	0.35

The Table 1.2 shows that the overall literacy rate was observed 88.25 per cent which varied from 85.27 to 91.62 per cent among different categories. This highlights the fact that literacy rate in the study areas is higher, but the quality of education is poor as indicated by low literacy index,

d) Occupational distribution

The data reveals that on overall categories agriculture was the main occupation as 85.34 per cent of work force practice farming in the study area, 8.23 and 6.43 per cent worker's population was engaged in public/private service sector and own business respectively .

e) Work force

The proportion of active workers was found highest (81.63%) in case of large farmer followed by (73.48 %) in case of small and lowest (71.64%) in medium. It was assumed that persons in the age group of 15-65 year be actively engaged in useful economic activities and termed as active work force. The highest dependents were found in case of medium farmers and lowest in large farms. The overall dependency ratio with respect to total workers was found to be 0.35 and among the different categories,

2. Existing resource structure

This section deals with the existing resource structure like land, cropping pattern, livestock, farm investment, etc. Category wise results in different aspects are given below:

2.1 Land use pattern

Land is a basic resource in the agrarian economy. Size of land holding is an important variable which directly affects the income, consumption, saving and investment of the sampled households. The land holdings were small in the study area and it attains a special status in determining the income generation opportunities, especially in rural areas. Thus, an examination of the land use pattern attains significance not only from the point of rural economy but also from the overall welfare view point.

Land use pattern determines the type of farming system in an area. Mushroom growers category wise land use pattern of sampled farmers is summarized in 1.3. The data reveals that the small and large category mushroom grower were having <1 hectare of land which means that as per the land holding categories they fall under marginal farmers, indicating that with the improvement in the education these farmers opted for diversification to boost their farm income

and livelihood. The average size of land holding on overall category basis was found 0.82 hectares out of which 86.02 per cent was cultivated area.

The area under orchard was found 64.73 per cent, Large farmer had largest proportion of area under orchard followed by small and medium. The area under Pastures land / uncultivated land (2.25%), forest land (6.59%), Area under non-agricultural use (4.06 %) and Area under mushroom house (0.82%) was worked out. Almost similar trend was observed across the different categories. Total operational area varied from 80.91 to 93.02 per cent among the different categories of the mushroom farm. The average size of holding on small, medium and large category was found to be 0.63, 1.03 and 0.86 hectares respectively.

Table 1.3: Land use pattern of selected mushroom growers

(Area in hectare)

Figure in parentheses are percentage to average total area

Land use Classes	**Farm Size**			
	Small	Medium	Large	Overall
Average Cultivated Area other than Orchard Area	0.15 (24.07)	0.20 (19.59)	0.18 (20.47)	0.18 (21.28)
Irrigated	0.06 (10.17)	0.12 (11.49)	0.11 (13.02)	0.09 (11.30)
Unirrigated	0.09 (13.9)	0.08 (8.11)	0.07 (7.44)	0.08 (9.98)
Average Orchard Area	0.41 (65.53)	0.63 (61.32)	0.62 (72.56)	0.53 (64.73)
Irrigated	0.24 (38.53)	0.49 (47.64)	0.22 (26.05)	0.33 (40.73)
Unirrigated	0.17 (27.00)	0.14 (11.99)	0.40 (46.51)	0.20 (23.19)
Total operational area	0.56 (89.6)	0.83 (80.91)	0.80 (93.02)	0.71 (86.02)
Area under forest tree	0.04 (6.62)	0.09 (8.28)	0.02 (1.86)	0.05 (6.59)
Pastures land / uncultivated land	0.01 (1.89)	0.04 (3.55)	0.01 (0.93)	0.02 (2.52)
Area under non-agricultural use	0.01 (1.51)	0.07 (6.68)	0.02 (1.86)	0.03 (4.06)
Area under mushroom bags	0.002 (0.38)	0.01 (0.58)	0.02 (2.33)	0.01 (0.82)
Total area	0.63 (100.00)	1.03 (100.00)	0.86 (100.00)	0.82 (100.00)

2.2 Cropping pattern

Cropping pattern in any region depends mainly on soil, altitude, micro-climate, availability of resources and management factors. The changes in the per cent share of area under different crops in the gross cropped area reveals the extent of agricultural diversification in sampled farms.

The cropping pattern of sampled farms was analyzed and the results have been presented in Table 1.4. It is evident from the table that the cropping intensity was highest in small mushroom growers (126.86%) followed by medium mushroom growers (124.26%) and large mushroom growers (122.00%). At overall level it was worked out to be 125.05 per cent, which indicates that there is a scope for increase in farm efficiency. Lower cropping intensity was also recorded because of the more area under fruit crops which accounted more than 60 per cent of gross cropped area. However, if cultivated area under field crop only be considered than cropping intensity is being about 1.97 per cent.

Table 1.4: Farm Category wise cropping pattern

(in hectare)

Particulars	Small	Medium	Large	Overall
Kharif crop				
Tomato	0.07 (9.82)	0.073 (7.11)	0.08 (8.2)	0.073 (8.31)
Capsicum	0.046 (6.45)	0.052 (5.06)	0.016 (1.64)	0.043 (4.90)
Beans	0.018 (2.52)	0.01 (0.97)	0.008 (0.82)	0.013 (1.48)
Ginger	0.018 (2.52)	0.059 (5.74)	0.072 (7.38)	0.043 (4.9)
Maize	-	0.007 (0.68)	-	0.003 (0.34)
Rabi crops				
Wheat	0.01 (1.4)	0.003 (0.29)	-	0.006 (0.68)
Pea	0.043 (6.03)	0.057 (5.55)	0.08 (8.20)	0.055 (6.26)
Cauliflower	0.03 (3.65)	0.05 (4.58)	0.02 (1.64)	0.03 (3.76)
Garlic	0.071 (9.96)	0.094 (9.15)	0.08 (8.2)	0.081 (9.23)
Fruit	0.411 (57.64)	0.632 (61.54)	0.624 (63.93)	0.531 (60.48)
Gross cropped area	0.713 (100.00)	1.027 (100.00)	0.976 (100.00)	0.878 (100.00)
Net sown area	0.56	0.83	0.80	0.71
Cropping intensity	126.86	124.26	122.00	125.05

Figure in parentheses are percentage to total gross cropped area

3. INCOME STRUCTURE

In order to highlight the relative importance of mushroom cultivation in the economy of sampled households; source wise break up of family income of different categories of sampled mushroom farms has been worked out and summarized in Table 1.5. The table reveals that average income from mushroom crop per annum contributed about 49.42 per cent to the total family income at overall level of sampled mushroom growers i.e., based on average crops of 2.33 taken by grower in a year followed by fruits 35.22 per cent, kharif crops 4.50 per cent and rabi crops 2.73 per cent. The share of income from mushroom, in the total income among the different mushroom growers' categories varied between 27.12 to 72.18 per cent from small to large farmer respectively indicating higher income contribution with increasing number of mushroom bags the share of income from mushroom in the total income in case of large mushroom growers was worked out to more than 72 per cent representing mushroom cultivation is the main vocation of their livelihood.

Table 1.5: Farm category wise average income composition of sampled households

(Amount in Rupees)

Particulars	Small	Medium	Large	Overall
Kharif crops	46500.00 (6.66)	67626.09 (4.97)	64850.00 (2.43)	57656.67 (4.50)
Rabi crops	29993.15 (4.30)	40998.91 (3.01)	34402.50 (1.29)	34946.92 (2.73)
Fruits	336681.50 (48.23)	546113.00 (40.14)	542120.00 (20.29)	451203.30 (35.22)
Mushroom	189302.80 (27.12)	591100.00 (43.44)	1928780.00 (72.18)	633237.90 (49.42)
Service/Business	95555.56 (13.69)	114782.60 (8.44)	102000.00 (3.82)	104000.00 (8.12)
Total	698033.00 (100.00)	1360621.00 (100.00)	2672153.00 (100.00)	1281218.00 (100.00)

Figure in parentheses are percentage to total

Conclusion

Socio-economic indicators revealed that majority of the sample households have nuclear families, the proportion of nuclear families ranging from 78.26 per cent in medium to 92.59 per cent in large category. On an average, the family size ranged between 4.90 members in small and 5.82 family members in Medium. Overall level, the average family size comprised of 5.26 persons. The number of females per thousand of males ranged between 690 in case of large to 1062 in medium category with an average of 897 at overall level. (What's about it related with mushroom production?)

Literacy status of studied households revealed that 88.25 per cent family members were literates at overall level and literacy index was found 2.69.Occupational distribution shows that 85.34 per cent of work force in the studied households practice farming, 8.23 per cent and 6.43 per cent workers population were engaged in public/private service sector and own business

respectively. Similar trends in occupational distribution were observed in case of small and medium category. In case of large category, business was preferred more than services.

On overall categories of mushroom growers 74.14 per cent were total workforce; among different categories it was found the highest per cent of active workers were reported in large category (81.63%) and lowest in medium category (71.64%). The overall dependency ratio w.r.t. total worker was worked out to be 0.35 indicating that on an average one worker has to support less than one family member.

The average orchard area out of total holding was found 64.73 per cent at overall level and among different categories it varies from 61.32 per cent in medium to 72.56 per cent in large. This indicates that fruit cultivation is more preferred vocation than any other vocation in the study area.

Investment pattern showed investment on buildings structures including mushroom house and store room accounted for 84.56, 87.21 and 88.32 per cent in small, medium and large category of mushroom growers, respectively. However, the overall investment on buildings was 87.14 per cent of the total investment. It is concluded that the main item of investment in mushroom cultivation is building structure for placing the mushroom bags. Mushroom contributed maximum in total farm income in case of medium and large category i.e.43.44 per cent and 72.18 per cent respectively. At overall its contribution was found 49.42 per cent to the total farm income.

Reference (complementary more references)

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