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Socio-economic Status of the Litchi Growers and Constraints Faced by them in Kangra District of Himachal Pradesh

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ABSTRACT

The purpose of this research was to determine the socio-economic situation and litchi problems in Himachal Pradesh. A random sample of 60 households was collected from three blocks of Kangra district using the random sampling approach. Using the cube root cumulative frequency approach, the sample was divided into two groups: Group I and Group II. The average land holding size in the total category was 0.79 hectares, with 18.98 per cent of that being cultivated. Maize (10.16 percent) and wheat (9.08 percent) were the most common crops in *Kharif* and *Rabi*, respectively. Litchi income varied from 28.74 to 64.49 percent among different categories, with 44.79 percent at the overall level, demonstrating that litchi farming is important in the economy of the studied households. The main issues were a labour shortage during peak periods, a higher commission rate, and a lack of a remunerative price. Non-availability of labour was determined to be the most common difficulty in Group II (57.69 %), which is considerably different from all other issues.

HIGHLIGHTS

⊙ Analyzing the socio-economic elements of litchi producers and finding litchi production concerns that may be of value to the state's litchi growers take up a modest bit of effort.

Keywords: Socio-economic status, Cube root cumulative frequency method, households, remunerative price

Litchi (*Litchi chinensis*), a highly ecologically sensitive subtropical tree fruit crop, is a member of Sapindaceae family. In India, there is a total of 98,000 hectares dedicated to litchi farming, and the country produces 721,000 metric tonnes worth of litchi fruit annually. It has very precise climatic conditions, thus it is only grown commercially in a few tropical and subtropical nations throughout the world, one of which is India. India is the world's second-largest producer of litchi, after China. Litchi is only grown commercially in the northern states, specifically the Himalayan foothills from Tripura to Jammu and Kashmir, and the Gangetic plains. Litchi cultivation is suitable in Himachal Pradesh, particularly in Kangra district's low hills and sub-

montane zone, and it is a popular fruit crop among orchardists. Due to its agro-climatic conditions, it can also be grown in Hamirpur, Una, and warmer areas of Mandi and Sirmour districts. A small amount of effort is expended in analyzing the socio-economic aspects of litchi growers and identifying litchi production concerns that may benefit the state's litchi growers

METHODOLOGY

Using a multistage random sampling technique, the

study was carried out in three progressive blocks of Litchi cultivation in Kangra district (32.0998°N, 766.2691°E) of Himachal Pradesh. A list of litchi growers from each selected block's villages was compiled, and two villages from each block were chosen at random. Finally, 10 growers from each village were chosen at random, resulting in a sample of 60 farmers. The cumulative cube-root frequency stratification method was used to divide the litchi growers into two groups based on the number of trees, Group-I (60 trees) and Group-II (>60 trees). Data on demographic characteristics such as family size, age, education, occupation, and problems encountered by litchi growers in various aspects of production and marketing were collected using a personal interview method on well-designed pre-tested schedules. Data were analysed using analytical tools and expressed in the form of frequencies and percentages.
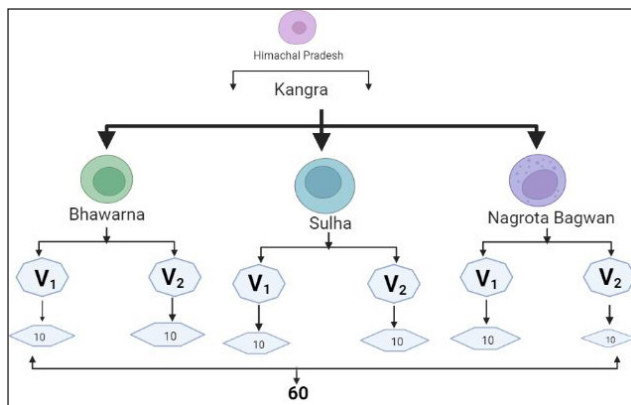

Fig. 1: Pictorial representation of selection of sample size

$$L_i = Y_{i-1} + \left(\frac{S_k \div L - S_{i-1}}{\sqrt[3]{f_i}} \right) (y_i - y_{i-1})$$

Where;

L = No. of strata

L_i = Upper limit of ith strata

Y_{i-1} = Lower limit of the class in which L_i lies

S_k = Cumulative total of f_i

f_i = Cube root of the frequency of the ith class in which L_i lies

S_{i-1} = Cumulative cube root of the frequency of preceding class to the class to which L_i lies

Y_i = Upper limit of the class in which L_i lies

Y_i-Y_{i-1} = Width of the class in which L_i lies

Chi square test has been applied to measure the degree to which a series of observed frequencies (*O*) of information on different problems deviate from their corresponding expected frequencies (*E*).

$$\chi^2 = \Sigma \frac{(O-E)^2}{E} \sim \chi^2 (r-1) df$$

Where,

r = no. of farm groups

RESULTS AND DISCUSSION

Cube–root cumulative frequency method of stratification was used for the classification of the litchi growers into two groups. Table 1 shows the distribution of the litchi growers on the basis of number of trees. The average number of trees in Group-I was 41, whereas, it was 92 in Group-II. The number of trees was low in Group-I, as evident from lower standard of deviation value and coefficient of variation.

**Table 1:** Distribution of sampled litchi growers according to number of trees

Categories	Mean	Range	Min	Max	SD	CV (%)
<60 (Group-I)	41.00	44.00	16.00	60.00	13.87	33.85
>60 (Group-II)	92.00	70.00	65.00	135.00	19.48	21.29

The sampled farmers socio-economic status has a significant impact on capital use, which also determines the size and efficiency of the labour force. It was observed that the average family size at the overall level was 5.57 persons per household, with 2.87 males and 2.70 females (Fig. 1). At the overall level, the average number of females per thousand males was 788. The analysis of family structure revealed that in the study area, the majority of families (85 %) were found to be nuclear families, as compared to joint (15%) families (Table 2). Agriculture was the most common occupation, accounting for 77.22 per cent of the labour force, according to the occupational distribution. Similar patterns were observed in Group-I and Group-II. Group-I preferred service over business while in Group-II more preference was given to business over service (Fig. 2).

Table 2: Group wise size and structure of the sampled growers in the study area

Particulars	Group-I	Group-II	Overall
Size of the family			
Average size of the family	5.88 (100.00)	5.15 (100.00)	5.57 (100.00)
Males	2.97 (50.50)	2.73 (52.99)	2.87 (51.50)
Females	2.91 (49.50)	2.42 (47.01)	2.70 (48.50)
Sex ratio	831.68	732.39	788.66
Structure of family			
Joint families (No.)	6.00 (17.65)	3.00 (11.54)	9.00 (15.00)
Nuclear families (No.)	28.00 (82.35)	23.00 (88.46)	51.00 (85.00)
Agriculture	3.24 (76.39)	3.19 (78.30)	3.22 (77.22)
Male	1.56 (36.81)	1.62 (39.62)	1.58 (38.03)
Female	1.68 (39.58)	1.58 (38.68)	1.63 (39.19)
Business	0.26 (6.25)	0.46 (11.32)	0.35 (8.45)
Service	0.74 (17.36)	0.42 (10.38)	0.60 (14.33)
Average number of workers	4.24 (100.00)	4.08 (100.00)	4.17 (100.00)

Figure in parentheses represent percentage to average family size.
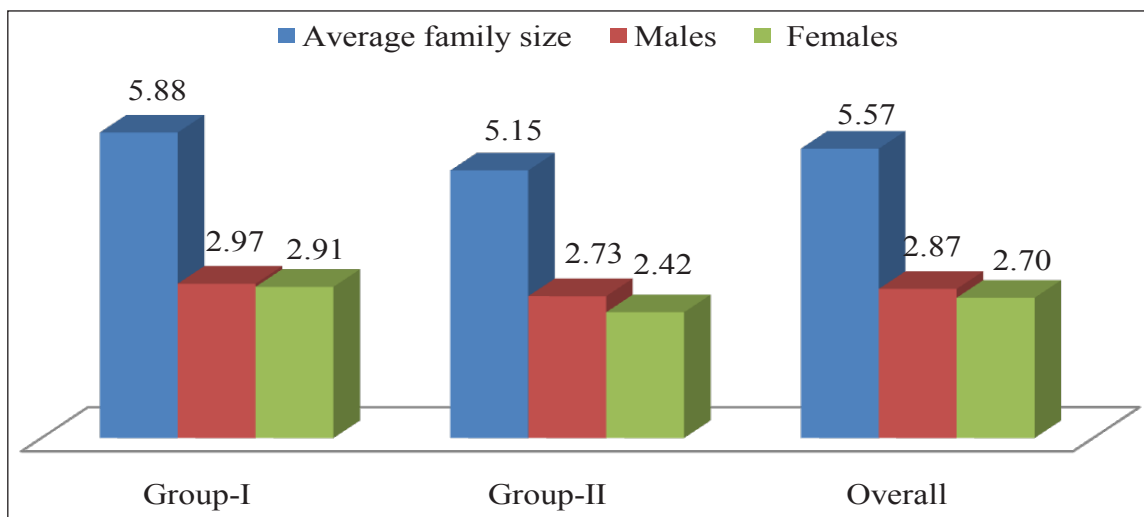
Fig. 1: Group wise average family size of the sampled households
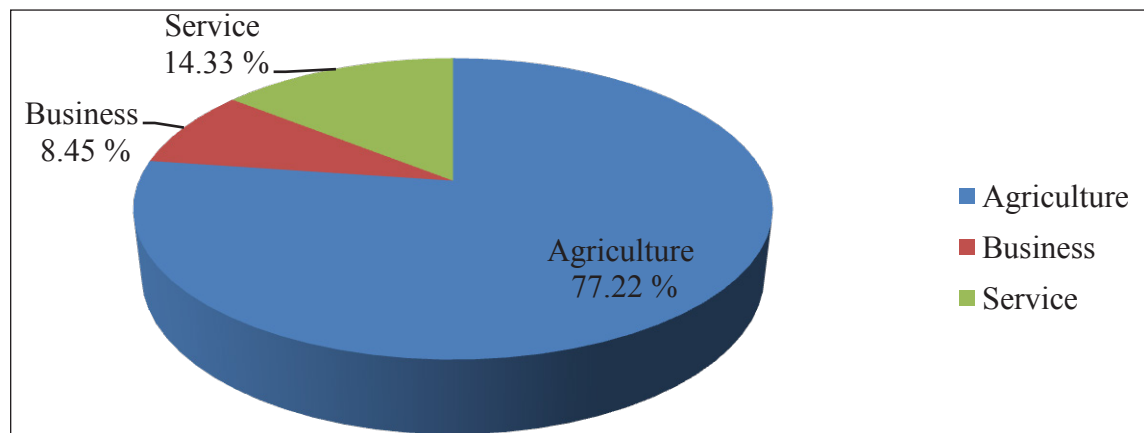
Fig. 2: Occupational distribution of the sampled households at overall level

Land use pattern determines the type of farming system in an area. Group wise land use pattern of litchi farmers is summarized in Table 3. The average size of land holding in the overall category was found to be 0.79 hectares, with 18.98 per cent of that area being cultivated. The total operational area varied between groups, ranging from 95.49 to 95.70 per cent. The average holding size in Groups I and II was 0.61 and 1.05 ha, respectively. The percentage of orchard land varied between groups, ranging from 66.34 to 84.35 per cent.

Table 3: Land utilization pattern of sampled growers (ha)

Land use Classes	Group-I	Group-II	Overall
Cultivated Area	0.17	0.12	0.15
	(29.36)	(11.14)	(18.98)
Irrigated	0.14	0.10	0.13
	(24.22)	(9.67)	(15.94)
Unirrigated	0.03	0.02	0.02
	(5.14)	(1.47)	(3.04)
Average area under fruit crops	0.39	0.89	0.61
	(66.34)	(84.35)	(77.02)
Irrigated	0.38	0.84	0.58
	(63.37)	(79.66)	(73.05)
Unirrigated	0.02	0.05	0.03
	(2.97)	(4.69)	(3.97)
Total operational area	0.57	1.00	0.76
	(95.70)	(95.49)	(96.01)
Forest Land	—	0.0008	0.0003
	—	(0.07)	(0.04)
Ghasnis/Pastures	0.01	0.01	0.0022
	(1.68)	(0.95)	(0.27)
Land put to Non Agriculture use	0.02	0.04	0.03
	(3.91)	(3.48)	(3.68)
Total land holding (hectares)	0.60	1.05	0.79
	(100.00)	(100.00)	(100.00)

*Figures in the parenthesis represent percentage to total.*

A close scrutiny of the cropping pattern also suggests the status of agriculture in the area. The proportional share of a particular crop in gross cropped area on the farm suggests the importance that the farmer attaches to a particular crop. The cropping pattern of sampled growers has been analyzed and the results have been presented in Table 4. Cropping intensity was highest in Group-I

(117.54%), followed by Group-II (112.00%). At overall level it was 113.16 per cent, indicating that there is room to improve farm efficiency. It was also observed that the most important crops in Kharif season was maize (10.16%) while that in the Rabi season the prominent crop was wheat (9.08%). Vegetable crops were also grown in the study area; however, the area under Rabi crops was found to be greater than that under *Kharif* crops which could be due to a lack of irrigation infrastructure. The area under litchi crop ranged from 55.28 per cent to 70.28 per cent among various groups.

Table 4: Group wise cropping pattern of the sampled growers (ha)

Particulars	Group-I	Group-II	Overall
***Kharif* crops**			
Maize	0.10	0.07	0.09
	(15.18)	(6.21)	(10.16)
Paddy	0.04	0.02	0.03
	(5.26)	(1.52)	(3.17)
***Rabi* crops**			
Onion	0.02	0.03	0.02
	(3.07)	(2.32)	(2.65)
Garlic	0.02	0.02	0.02
	(2.53)	(1.94)	(2.20)
Potato	0.03	0.04	0.04
	(4.61)	(3.75)	(4.13)
Wheat	0.06	0.10	0.08
	(9.58)	(8.68)	(9.08)
Fruit crops			
Litchi	0.37	0.78	0.55
	(55.28)	(70.28)	(63.68)
Other fruits	0.03	0.06	0.04
	(4.48)	(5.31)	(4.94)
Gross cropped area	0.67	1.12	0.86
	(100.00)	(100.00)	(100.00)
Net sown area	0.57	1.00	0.76
Cropping intensity (%)	117.54	112.00	113.16

Figures in the parenthesis represent percentage to total.
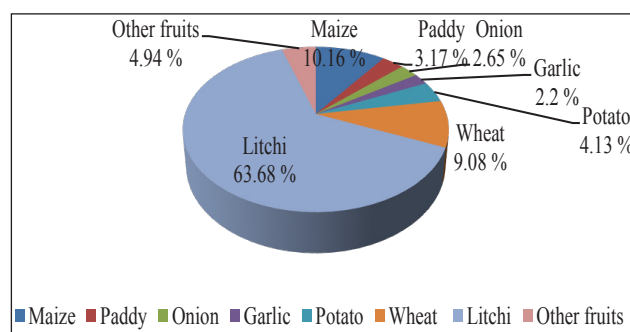
Fig. 3: Land utilization pattern of the sampled growers at Overall level

To examine the relative importance of litchi in the economy of sampled growers; source wise break up of family income of different categories has been summarized in Table 5. The average litchi production contributed approximately 44.79 per cent of the total family income of the sampled growers in the study area. The remaining sources of income came from other agricultural and non-farm activities such as field crop cultivation, other fruit crops, and non-farm activities such as service and business. The share of litchi income ranged from 28.74 to 64.49 per cent across groups, with an average of 44.79 per cent, indicating the importance of litchi cultivation in the economy of the sampled households.

Table 5: Group wise average income composition of the sampled growers (₹/annum)

Particulars	Group-I	Group-II	Overall
Field crop	7144.10	5468.20	6417.90
	(2.01)	(1.45)	(1.76)
Vegetable	8185.30	4423.10	6555.00
	(2.31)	(1.17)	(1.80)
Litchi	102002.00	243802.00	163449.00
	(28.74)	(64.49)	(44.79)
Other fruits	17470.60	37211.50	26025.00
	(4.92)	(9.84)	(7.13)
Service/business	220091.00	87149.30	162483.00
	(62.02)	(23.05)	(44.52)
Total	354892.00	378054.00	364929.00
	(100.00)	(100.00)	(100.00)

Figure in parentheses represent percentage to the total.

In this section the problems faced by the farmers in the cultivation and marketing of litchi along with the reasons for their adoptions in the study area have been discussed. The responses of the farmers to the problems were recorded and results were shown in Table 6. The problems were categorised as production and marketing problems. Among the production problems the main issues included labour shortage, high wage rates, and non-availability during peak operating hours. Higher commissions, a lack of bargaining power, payment delays, a large number of intermediaries, and a lack of transportation facilities were among the marketing issues. The perusal of the table shows that the problem of non-availability of labour at peak operation time was more prevalent in Group-II (57.69 %), which was significantly

different from Group-I, and other problems were non-significant, implying that all farmers in both groups experienced these issues.

Table 6: Problems faced by litchi growers in the study area (Multiple response per cent)

Problems	Group-I	Group-II	Overall	Chi-square
No. of farmers	34	26	60	
Production problems				
Shortage of labour	11.76	19.23	15.00	1.83
Higher wages rates	32.35	42.31	36.67	1.34
Non-availability at peak operation time	23.53	57.69	38.33	14.73**
High transportation cost	44.12	65.38	53.33	4.19
Desired brand not available	2.94	3.85	3.33	0.12
Fertilizer not available	8.82	11.54	10.00	0.37
High prices of chemicals	35.29	23.08	30.00	2.55
Chemicals not available on time	50.00	46.15	48.33	0.15
Irrigation facility not available	79.41	69.23	75.00	0.70
Lack of extension education	47.06	57.69	51.67	1.09
Non availability of healthy plant material	23.53	23.08	23.33	0.02
Diseases and pest infestation	47.06	46.15	46.67	0.03
Marketing problems				
Higher commission	23.53	15.38	20.00	1.70
Lack of bargaining power	8.82	15.38	11.67	1.81
Delay in payments	11.76	3.85	8.33	3.95
Large number of intermediaries	5.76	7.85	6.67	3.95
Lack of transport facilities	35.29	42.31	38.33	0.64
Lack of rumenerative price	38.24	26.92	33.33	1.96

**significant at 5 per cent level of significance.*

CONCLUSION

The study has brought to light a number of issues concerning the production and marketing of litchi in the study area. Based on the study's findings, some policies and recommendations that are likely to be useful for policy formulation may be advanced. Orchardists should be properly trained to perform various operations in the orchard, particularly timely application of fertilisers and insecticides,

as well as other improved management practises. Fertilizers and plant protection chemicals, for example, should be made available to orchardists on time and at a reduced cost. Due to the perishable nature of the produce, fruit processing and cold storage units in the study area can assist orchardists in obtaining better prices for culled fruit and, to some extent, solving marketing problems. To meet the growing demand for litchi, an emphasis on their marketing potential is also required. The current study's findings have resulted in a number of recommendations for the production and marketing of litchi. In recent years, the state has paid close attention to the development of the litchi industry. However, there is a significant disparity in litchi productivity. Short-term training programmes on disease management, high density planting, collection techniques, and scientific methods of processing and grading should be organised in the study area to improve producers' ability to maximise net profit and reduce produce waste. However, the study was conducted in a small geographic area with a small number of participants. As a result, the study's findings should be interpreted with extreme caution.

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