Socio Economic Attributes of Wheat Growers in Mid Hills of Kangra Valley in Himachal Pradesh—An Appraisal

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Abstract—The present study examines the socio-economic profile of wheat growers in Kangra Valley of Himachal Pradesh. Using a multistage random sampling design, 80 wheat growers were selected from ten villages across two randomly selected blocks. Results revealed that most farmers (53.75%) were smallholders with less than one hectare of land, indicating limited potential for large-scale mechanization and a focus on subsistence agriculture. Literacy rates among farm heads exceeded 90%, with large farmers showing slightly higher literacy (94.59%) than small farmers (93.02%), suggesting receptiveness to improved technologies. Agriculture remained the primary occupation (69.75% of household workers). Land use analysis showed cultivated land accounted for 81.43% of operational holdings, with 65.05% under irrigation. Wheat dominated the rabi season, occupying 39.04% of gross cropped area, while maize (25.27%) and paddy (12.83%) were major kharif crops. Cropping intensity averaged 190.32%, reflecting multiple cropping practices. The average family size was 5.78 members, with 58.75% nuclear families. Farm investment in machinery and implements showed a positive correlation with farm size, averaging ₹2,76,998 for small farms and ₹3,65,758 for large farms. Livestock inventory averaged 1.83 animals per farm, dominated by cows (39.36%) and buffaloes (33.29%). The study highlights the predominance of smallholders, high literacy, and diversified livelihood strategies in the region.

Keywords— Wheat growers, family size, age, education, literacy rate, occupation, cropping pattern, farm investment, landholding, livestock.

I. INTRODUCTION

Wheat is predominantly a rabi crop in Kangra, sown from mid-September to November and harvested between mid-April and June. Agriculture is the main occupation in the district, with wheat playing a pivotal role in the local agrarian economy and food security. Kangra has approximately one lakh hectares of cultivable land, about 92,000 hectares of which are typically dedicated to wheat cultivation. A significant challenge is that only about 36% of the district's land has irrigation facilities, making most farmers reliant on rainfall. Wheat is typically grown in rotation with maize or rice and adapts to various soil types in the region, excluding waterlogged areas. Yield is susceptible to rainfall variability, particularly dry spells in January.

Examining the socio-economic attributes of wheat growers is essential as these factors influence farm management, technology adoption, productivity, and overall livelihoods, thereby guiding effective policy formulation and agricultural development strategies. Socio-economic status—including age, education, landholding size, and income—affects farmers' capacity and willingness to adopt new technologies and invest in modern inputs. Understanding these profiles helps identify specific challenges, such as limited access to credit, high input costs, or lack of machinery among smallholders. Tailored

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agricultural programs can then be designed to align with farmers' real-world conditions. Furthermore, socio-economic surveys reveal resource availability—family labour, irrigation access, farm assets—which are vital inputs for research and project planning. This study therefore examines the social and economic status of wheat growers in Kangra Valley to inform targeted interventions and support sustainable agricultural development.

II.   METHODOLOGY

2.1   Study Area:

The study was purposively conducted in Kangra district of Himachal Pradesh. According to the Statistical Abstract of Himachal Pradesh (2022-23), Kangra holds the first position in area and production of wheat among the state's twelve districts. Wheat is cultivated on 86,493 hectares with a production of 192,804 MT, accounting for 27% of the state's total area and production, making it a suitable region for this study.

2.2   Sampling Design and Sample:

A multistage random sampling design was employed. First, a complete list of wheat-growing blocks was prepared with the district Agriculture Department's consultation. Two blocks, Nurpur and Indora, were randomly selected. Second, a list of wheat-growing villages was prepared for each block with the Block Development Office's assistance, and five villages per block were randomly selected. Third, a list of wheat growers in each selected village was prepared, and eight farmers were randomly chosen per village, resulting in a total sample of 80 farmers.

2.3   Categorization of Farmers:

Farmers were classified into small and large categories using the cumulative square-root frequency method, with 1 hectare as the demarcation line. Small farmers (<1 ha) numbered 43, and large farmers (1–3 ha) numbered 37.

2.4   Data Collection:

Both primary and secondary data were collected. A pre-tested schedule was used to collect socio-economic data on demographic features, family size, age, education, occupation, inventory, farm machinery investment, livestock composition, and land use for 2024–25. Secondary data were obtained from the Agriculture Department and Block Development Offices.

2.5   Analytical Framework:

Data were analyzed using simple tabular analysis, averages, percentages, and ratios to present the socio-economic profile.

III.   RESULTS AND DISCUSSION

3.1   Landholding Distribution:

Table 1 shows that 53.75% of sampled farmers were smallholders (<1 ha), while 46.25% were large farmers (1–3 ha). This reflects the fragmented landholding pattern typical of hill regions, consistent with Kaur et al. (2023). Smallholders often focus on subsistence, while larger farmers engage in commercial surplus production.

TABLE 1

DISTRIBUTION OF SAMPLED HOUSEHOLDS BY LANDHOLDING SIZE

Farm Category	Size of Land Holding	Number of Farmers	Percentage
Small	<1 ha	43	53.75
Large	1–3 ha	37	46.25
Overall		80	100

3.2   Demographic Profile:

The average family size was 5.78 members, with large farms averaging 6.03 and small farms 5.56 (Table 2). Nuclear families predominated (58.75%), slightly more among small farms (60.47%). Joint families accounted for 41.25%. The gender ratio

was balanced, with males comprising 33.44% and females 32.03% of the household population. These findings align with Menon (2023), who reported similar family patterns in Kangra.

TABLE 2
DEMOGRAPHIC PROFILE BY FARM CATEGORY

Particulars	Small	Large	Overall
Number of families	43	37	80
Joint family (%)	39.53	43.24	41.25
Nuclear family (%)	60.47	56.76	58.75
Average family size	5.56	6.03	5.78
Average number of males	1.88	1.99	1.93
Average number of females	1.75	1.97	1.85
Gender ratio for male	38.81	33.00	33.44
Gender ratio for female	31.47	32.67	32.03

3.3   Age Distribution of Household Heads:

Most household heads (45%) were aged 41–60 years, indicating an experienced farming population (Table 3). Those under 40 years constituted 37.5%, suggesting moderate youth involvement, while those above 60 years accounted for 17.5%. This age structure supports continuity in traditional practices while allowing gradual adoption of modern techniques (Kumar et al., 2025).

TABLE 3
AGE-WISE DISTRIBUTION OF HOUSEHOLD HEADS

Age Group (Years)	Small (%)	Large (%)	Overall (%)
Up to 40	32.56	35.14	37.5
41–60	48.84	48.65	45
Above 60	18.6	16.21	17.5

3.4   Educational Status:

Literacy among household heads was high (93.75%), with large farmers showing marginally higher literacy (94.59%) than small farmers (93.02%) (Table 4). Most heads had completed senior secondary (27.5%), matriculation (23.75%), or graduation (22.5%). Only 6.25% were illiterate. High literacy enhances capacity to adopt innovations, as noted by Mishra and Ghadei (2015).

TABLE 4
EDUCATIONAL STATUS OF HOUSEHOLD HEADS (NUMBER)

Education Level	Small	Large	Overall
Illiterate	3(6.98)	2(5.41)	5(6.25)
Primary	6(13.95)	4(10.81)	10(12.50)
Middle	3(6.98)	3(8.11)	6(7.50)
Matriculation	10(23.26)	9(24.92)	19(23.75)
Senior Secondary	12(27.91)	10(27.03)	22(27.50)
Graduation and above	9(20.93)	9(24.32)	18(22.50)
Total	**43(100.00)**	**37(100.00)**	**80(100.00)**
Literacy Rate (%)	**93.02**	**94.59**	**93.75**

Note: Figures in the brackets indicate percentages to the total in each category.

3.5   Occupational Pattern:

Agriculture was the primary occupation, engaging 69.75% of household workers (Table 5). Service (15.23%) and business (15.03%) provided supplementary income. Gender distribution in agriculture was nearly equal (males 51.79%, females 48.21%), highlighting women's active role. This aligns with Pratyush (2022), who reported similar occupational patterns in Himachal Pradesh.

TABLE 5
OCCUPATIONAL DISTRIBUTION

Occupation	Small (%)	Large (%)	Overall (%)
Service	16.67	13.88	15.23
Business	15.71	14.4	15.03
Agriculture	67.63	71.72	69.75
Av. of male in agriculture	51.18	52.33	51.79
Av. of female in agriculture	48.82	47.76	48.21

3.6   Farm Investment in Implements and Machinery:

Investment increased with farm size, averaging ₹2,76,998 for small farms and ₹3,65,758 for large farms (Table 6). Major implements (95.32% of investment) were dominated by tractors (56.62%) and threshers (28.16%). Minor implements (4.68%) included ploughs, levellers, and grass cutters. This reflects a trend toward mechanization to enhance productivity, consistent with Ruchika (2016).

TABLE 6
AVERAGE INVESTMENT ON FARM IMPLEMENTS AND MACHINERY (₹/FARM)

Particulars	Small	Large	Overall
Major Implements			
Tractor	1,45,400.00(55.12)	2,03,657.98(58.36)	1,72,344.32(56.62)
Threshers	75,946.87(28.79)	95,735.76(27.43)	85,099.23(28.16)
Power Tiller	27,786.67(10.53)	31,786.65(9.11)	29,636.66(9.87)
Others	3009.83(5.56)	3382.82(5.10)	3182.34(5.35)
Subtotal	**2,63,798.30(100.00)**	**3,48,986.72(100.00)**	**3,03,197.94(100.00)**
Minor Implements			
Plough	5,177.00(39.22)	7,569.47(45.13)	6,283.52(41.96)
Leveller	2,845.45(21.56)	3,184.45(18.99)	3,002.24(20.37)
Grass Cutter	2,167.23(16.42)	2,634.77(15.71)	2,383.47(16.09)
Others	14664.76(22.28)	17806.33(20.17)	16117.74(21.58)
Subtotal	**13,199.51(100.00)**	**16,771.51(100.00)**	**14,851.56(100.00)**
Total Average Investment	**2,76,997.81**	**3,65,758.23**	**3,18,049.50**

Note: Figures in the brackets indicate percentages to the total in each category.

3.7 Livestock Inventory:

Livestock averaged 1.83 animals per farm, dominated by cows (39.36%) and buffaloes (33.29%) (Table 7). Young stock comprised 13.23%, goats 7.63%, and poultry 6.49%. Dairy animals provide supplementary income and draft power, integral to mixed farming systems (Pratyush, 2022).

TABLE 7
LIVESTOCK INVENTORY BY FARM CATEGORY (NUMBER/FARM)

Particulars	Small	Large	Overall
Cow	0.64(38.79)	0.81(39.90)	0.72(39.36)
Buffalo	0.58(35.15)	0.64(31.53)	0.61(33.29)
Young Stock	0.2(12.12)	0.29(14.29)	0.24(13.23)
Goat	0.13(7.88)	0.15(7.39)	0.14(7.63)
Poultry	0.1(6.06)	0.14(6.90)	0.12(6.49)
Total	**1.65(100.00)**	**2.03(100.00)**	**1.83(100.00)**

Note: Figures in the brackets indicate percentages to the total in each category.

3.8 Land Use Pattern:

Cultivated land accounted for 81.43% of operational holdings, with 65.05% irrigated (Table 8). Large farms had a higher proportion of cultivated (86.57%) and irrigated land (69.54%). Orchards covered 5.78%, while pastures and non-agricultural uses constituted smaller shares. Efficient land use and irrigation management support crop productivity in the hills (Mohan et al., 2025).

TABLE 8
LAND USE PATTERN (HECTARES)

Particulars	Small	Large	Overall
Cultivated area	0.67(77.01)	1.74(86.57)	1.16(81.43)
- Irrigated	0.41(61.19)	1.21(69.54)	0.78(65.05)
- Unirrigated	0.26(38.81)	0.53(30.46)	0.38(34.95)
Orchard area	0.06(6.90)	0.09(4.48)	0.07(5.78)
Total operational land	0.73(83.91)	1.83(91.04)	1.24(87.21)
Pastures land	0.03(3.45)	0.04(1.99)	0.03(2.77)
Land put to non-agricultural use	0.11(12.64)	0.14(6.97)	0.12(10.02)
Total land holding	0.87(100.00)	2.01(100.00)	1.40(100.00)

Note: Figures in the brackets indicate percentages to the total in each category

3.9　Cropping Pattern:

Wheat occupied 39.04% of gross cropped area, dominating the rabi season (Table 9). Maize (25.27%) and paddy (12.83%) were major kharif crops. Vegetables and fodder crops occupied smaller shares. Cropping intensity was 190.32%, indicating intensive land use. Fruit crops like kinnow, guava, and sweet orange provided diversification. This pattern balances food security with income generation, typical of hill agriculture (Sood, 2024).

TABLE 9
CROPPING PATTERN (% OF GROSS CROPPED AREA)

Crops	Small (%)	Large (%)	Overall (%)
Wheat	38.69	39.2	39.04
Maize	23.36	26.14	25.27
Paddy	11.68	13.35	12.83
Vegetables	14.6	12.04	12.61
Fodder	2.92	2.56	2.68
Fruits	4.38	2.56	3.12
Gross cropped area (ha)	1.37	3.52	2.36
Net sown area (ha)	0.73	1.83	1.24
Cropping Intensity (%)	**187.67**	**192.34**	**190.32**

IV.   CONCLUSION

This study reveals that wheat farming in Kangra Valley is characterized by small landholdings, high literacy, and a mixed livelihood strategy combining agriculture, livestock, and off-farm activities. The predominance of smallholders (53.75% with <1 ha) underscores the need for targeted policies supporting subsistence farmers, including improved access to credit, inputs, and small-scale mechanization. High literacy (93.75% among household heads) presents an opportunity for effective extension services and technology dissemination. Agriculture remains the primary occupation, with significant involvement of women (48.21% of agricultural labour). Investment in farm machinery correlates positively with farm size, highlighting disparities in capacity to mechanize. Livestock, particularly dairy animals, forms a crucial supplementary income source. Land use is efficient, with high cropping intensity is 190.32% and a significant irrigated portion (65.05% of cultivated area). The cropping pattern is dominated by wheat, maize, and paddy, with limited diversification into high-value fruits and vegetables.

Policy Implications:

1. Focus on smallholder support through tailored credit schemes and subsidized inputs.

2. Leverage high literacy for digital extension and training in improved agronomic practices.

3. Promote water-efficient irrigation technologies to optimize water use.

4. Encourage diversification into high-value horticulture and vegetable crops to enhance income.

5. Strengthen livestock development programs, particularly dairy, for additional revenue.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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