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RESEARCH ARTICLE

Evaluation of socio-economic status and cost-return structure of major vegetable crops in Kullu Valley of Himachal Pradesh (India)

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Abstract

The present study was carried out in Kullu Valley of Himachal Pradesh with the objective of finding out the socio-economic status and cost-return structure of the farmers. The multi-stage random sampling procedure was adopted to select the respondents. The costs and returns structure has been reported for the production of major vegetables, viz. tomato, cauliflower and peas in two vegetable-dominated developmental blocks of the district Kullu (Kullu and Naggar). Primary data has been collected through survey method for the agricultural year 2019-2020. The study revealed that per hectare cost A1 was highest for peas, followed by tomato and was the lowest for cauliflower. However, the per quintal cost of cultivation has been found to be the highest for tomato, followed by peas and cauliflower. Gross returns as well as net returns per hectare have been observed to be highest for tomato, followed by pea and cauliflower. The study suggests that to promote this enterprise, niche areas for off-season vegetable cultivation need to be identified as the vegetables grown in the district enjoy price advantage due to their off-season nature and efforts to tap irrigation potential in those areas should be enhanced. Education of farmers for scientific management of crops and provision of improved tools for efficient use of labour have also been suggested to lower production costs and make the vegetable cultivation more beneficial to farmers, particularly to the small and marginal farmers in the state.

Keywords

Costs; gross returns; peas; tomato; vegetable cultivation.

Introduction

Vegetables are important constituents of Indian agriculture and are grown in an area of 10,353 thousand hectares with an annual production of 1,91,769 thousand MT (1). Vegetables with shorter duration and higher productivity have resulted in greater economic returns to farmers over the last two decades. Agriculture is the main occupation of the people in Himachal Pradesh. The total area under vegetable cultivation in the state is 8,861 thousand hectares with a total production of 1776.02 thousand MT in the year 2019-2020. The major vegetables grown in the state are cabbage, okra, tomato, capsicum, chillies, french beans, radish, pea, carrot, cauliflower, spinach, ginger and potato (2).

In the state, several vegetables grown in the summer season and

some vegetables grown during the kharif season are harvested at a time when they cannot be produced in the plains. These off-season vegetables have a definite market advantage and provide assured better returns to the farmers. The Kullu district of the state has become famous for the production of quality peas, cabbage, cauliflower, tomato, french bean and capsicum. Also, being short-duration crops, 3-4 crops of vegetables can be taken by the farmers in the mid-hills per annum to augment their income. Off-season vegetable production and marketing is the most profitable farm business giving very high production and income to farmers per unit area of land (3).

In this backdrop, the present study was conducted to investigate the costs involved and returns obtained from the cultivation of major vegetables in the Kullu district of Himachal Pradesh.

Materials and Methods

Kullu, being one of the leading districts of Himachal Pradesh in the production of off-season vegetables, was purposively selected for study as the vegetables grown in the district enjoy price advantage due to their off-season nature. Multi-stage Random Sampling technique was used to select the respondents (4). At the first stage, 2 development blocks (Kullu and Naggar) out of 5 blocks in the district (viz., Kullu, Naggar, Anni, Banjar and Nirmand) were selected randomly. At the second stage, 5 panchayats from each block were selected randomly. The panchayats selected from the Kullu block were: Bajaura, Shamshi, Jia, Hatt and Mohal and the panchayats selected from the Naggar block were: Hallan-I, Hallan-II, Katrain, Badagran and Brann, respectively. At the third stage, a list of farmers growing vegetables was prepared from the selected panchayats and a sample of 6 vegetable growers was taken assigning random number using simple random technique from each panchayat, thus comprising a sample of 60 vegetable growers in total for final survey.

The selected farmers were post-stratified into three categories, viz., marginal, small and medium by using cumulative square root frequency method (5). Primary data were collected through the survey method using specially designed and pre-tested schedules. The data were collected on land inventory, farm implements and machinery, cropping pattern, farm inputs and crop yields. Secondary data pertaining to the area, production, productivity, market arrivals and prices was collected from different government offices, revenue offices, Department of Horticulture, Department of Agriculture as well as from the various available literatures and websites.

Simple tabular analysis was employed in the study to evaluate the socio-economic status of the farmers (6). Three vegetables, viz. tomato, cauliflower and peas were selected for the study. The cost of production of the selected vegetables was calculated as per the definition given by Commission on Agricultural Costs and Prices (CACP) (7). The study was carried out during 2019-2020 at Department of Social Sciences, College of Forestry, Dr. Y.S Parmar University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh.

Results and Discussion

Socio-Economic Profile of Households

Family Structure and Size

Family structure refers to the people who live together in one household, even though many other people may be part of those individuals' families by blood, marriage, or adoption (8). The size and structure of the sampled households were analysed and is presented in the Table 1, Figure 1. which reveals that majority (58.33 %) households in the study area were having joint families while 41.67 % had nuclear families, among which the highest number of nuclear families were found in case of marginal farmers, followed by the small farmers and medium farmers.

Table 1. Demographic profile of sampled households in the study area.

		Marginal	Small	Medium	Overall
Family	Joint Family	9(36.00)	15(65.22)	11(91.67)	35.00(58.33)
	Nuclear Family	16(64.00)	8.00(34.78)	1.00(8.33)	25.00(41.67)
Adult	Male	2.12(40.38)	2.61(39.49)	3.25(44.83)	2.53(41.09)
	Female	1.84(35.05)	2.83(42.81)	2.83(39.03)	2.42(39.22)
Children	Male	0.49(9.33)	0.70(10.59)	0.42(5.79)	0.55(8.91)
	Female	0.81(15.24)	0.48(7.11)	0.75(10.35)	0.67(10.86)
Average family size		5.25(100.00)	6.61(100.00)	7.25(100.00)	6.1 (100.000)
Sex ratio		1011.66	996.80	975.50	1001.60

Figure in parentheses are percentages to average family size.

The data in the table shows that the average family size varies between 5.25 members per family in case of marginal farmers to 7.25 members per family in case of medium farmers. At overall level, the average family size was found to be 6.17 persons per household out of which 41.09 and 39.22 % were male and female adults respectively. The study revealed that there is a direct relationship between the sizes of farm and family.

Literacy Status

Literacy rate is a reflection of good human capital. Higher level of literacy not only results in greater level of awareness and adoption of technology but also contributes to improvement of economic and social well-being of the societies (9).

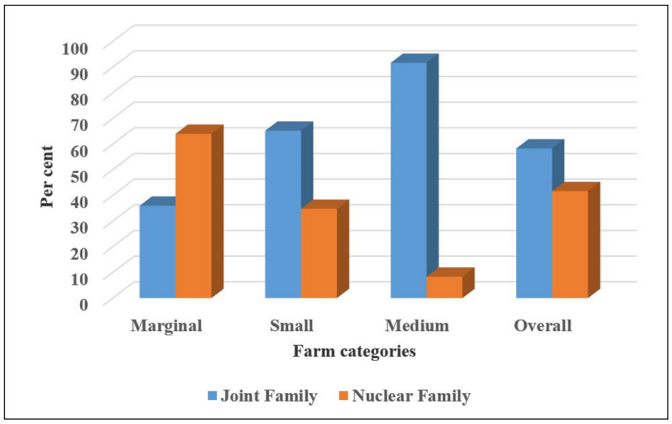

Fig 1. Pictorial representation of family structure of sampled households.

The data related to educational status of sample households was analysed and is presented in the Table 2. The table reveals that the overall literacy rate was found higher in case of males (79.22 %) as compared to females (77.67 %). The literacy index varies from 2.22 to 2.69 in males and from 2.14 to 2.29 in the case of females. The findings revealed that the literacy rate is high in the study area but the literacy index show that highest proportions of family members were educated up to high school and few up to graduation which indicate that the quality of education is below average. Similar trend was observed among the different categories of farmers.

family members engaged in agriculture were found in the marginal categories followed by the medium and small farm categories, while service people were highest in medium farm categories.

Work force

The economies of households depend upon the strength of active workers. Each individual is different from each other because of their different educational background to which they belong, age and the perception (11). Per household distribution of workers and dependents of the sampled households was worked out and presented in Table 4. The proportion of active workers was worked out to be 75.64 % which was highest in small farms and lowest in medium farms 66.62 %. It was assured that persons in the age group of 15 to 65 years were actively engaged in useful economic activities and were termed as working force. The highest number of dependents is observed in case of medium farms (33.38 %) followed by marginal farms (30.48 %) and lowest (24.36 %) in small farm categories.

The overall dependency ratio with respect to workers was found to be 0.40 and among different categories, it was observed highest in case of medium (0.50) followed by marginal (0.44) and then small (0.32). Dependency ratio indicates that on an average, one worker has to support less than one member in the family in the study area.

Table 2. Farm category wise educational status of sample households in study area.

Particulars (%)	Marginal			Small			Medium			Overall		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Illiterate	18.39	18.94	18.67	15.71	15.45	15.58	15.8	18.72	17.24	16.88	18.12	17.5
Primary	9.2	15.15	12.19	7.85	7.88	7.87	6.81	9.22	8.00	7.79	10.68	9.24
Middle	24.52	22.73	23.62	15.71	17.27	16.49	13.62	23.18	18.34	18.51	20.39	19.45
High school	21.46	13.64	17.52	21.15	11.82	16.49	13.62	18.72	16.14	19.48	13.92	16.69
Graduation	22.99	26.52	24.76	35.35	40.91	38.12	45.5	27.93	36.83	33.44	32.69	33.06
Non-school going	3.45	3.03	3.24	4.23	6.67	5.45	4.63	2.23	3.45	3.9	4.21	4.05
Literacy Rate	78.16	78.03	78.1	80.06	77.88	78.97	79.56	79.05	79.31	79.22	77.67	78.44
Literacy Index	2.22	2.14	2.18	2.55	2.59	2.57	2.69	2.29	2.49	2.47	2.34	2.4

Occupational distribution

Occupational distribution plays a crucial role in the Indian economy (10). Occupational distribution of the family is important in defining the economic status of the family. It is assumed that if the area is more developed, there is more diversification in the employment pattern, which would result in increased income to the household. Generally, in the hills, there are few avenues other than farming, so the hilly people are always in search of alternative employment avenues to enhance the family income.

It has been found from the Table 3, Figure 2. that about 64.09 % of people are engaged in agriculture as a main occupation in the area while 13.64 % of family members are involved in private services followed by own business 7.95 %, government services 7.27 % and about 4.32 % were engaged as wage labours.

Among the different categories of farms, the highest

The gender wise distribution of farm workers is presented in Table 5. At overall level, 53.90 % of workers were males, whereas 46.10 % of workers were females. In marginal, small and medium categories, male workers were more engaged in agriculture than the female workers.

Land use pattern

In all resources, land is a limited and most important basic natural resource. The layout or arrangement of the uses of the land is known as “land use pattern” (12). Land use pattern determines the type of farming system in any area. Farm categories wise land use pattern of sample farmers was worked out and is summarized in Table 6.

On overall farm category basis, the average size of land-holding was found to be 1.12 hectares out of which 47.51 % was under field crops. About 13.41 % area was put under non- agriculture use. The total cultivated area at overall level was found to be 81.58 % of the total land

holding out of which 62.99 % was irrigated. The average size of holding on marginal, small and medium farms was found to be 0.62, 1.13 and 2.12 hectare respectively.

Table 3. Average occupational pattern of sampled households

Particulars	Marginal	Small	Medium	Overall
Agriculture	2.44 (66.84)	3.04 (60.80)	3.17 (65.63)	2.82 (64.09)
Private Service	0.56 (15.34)	0.74 (14.80)	0.42 (8.70)	0.60 (13.64)
Business	0.17 (4.66)	0.48 (9.60)	0.50 (10.35)	0.35 (7.95)
Government Service	0.24 (6.58)	0.35 (7.00)	0.42 (8.70)	0.32 (7.27)
Wage Labour	0.24 (6.58)	0.17 (3.40)	0.17 (3.52)	0.19 (4.32)
Rural artisan	0.00 (0.00)	0.22 (4.40)	0.15 (3.10)	0.12 (2.73)
Total	3.65 (100.00)	5.00 (100.00)	4.83 (100.00)	4.40 (100.00)

Figure in parentheses are percentage to average workers

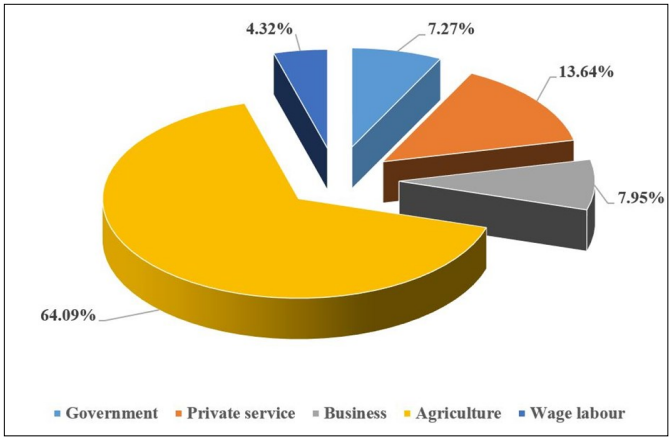

Fig 2. Pictorial representation of occupational distribution of the sample households

Cropping pattern

Cropping pattern means the proportions of area under various crops at a point of time (13). Cropping pattern in any region depends mainly on soil type, altitude, micro-climate, availability of resources and management factors. The changes in the % share of area under different crops in the gross cropped area revealed the extent of agricultural diversification which reflects the future scope of each crop along with tentative requirements of the inputs for different crops. The cropping pattern of sampled growers was examined and the results have been presented in Table 7 which reveals that the main crops grown in kharif season were maize, capsicum, tomato and beans. It is evident from the table that on an overall farm category, 0.16-hectare area was cultivated under cereal crop and 0.36-hectare area was under vegetable crops. Among the vegetable crops, the highest area 28.85 % was cultivated under tomato followed by capsicum 23.08 % and beans 17.13 % respectively.

Table 4. Farm category wise dependency ratio of the sample households

Particulars	Marginal	Small	Medium	Overall
Average number of workers	3.65 (69.52)	5.00(75.64)	4.83 (66.62)	4.40 (71.31)
Average number of dependents	1.60 (30.48)	1.61 (24.36)	2.42 (33.38)	1.77 (28.69)
Average Family Size	5.25 (100.00)	6.61 (100.00)	7.25(100.00)	6.17 (100.00)
Dependency ratio w.r.t. workers	0.44	0.32	0.50	0.40
Dependency ratio w.r.t. family size	0.30	0.24	0.33	0.29

Figures in parentheses are percentages to average family size.

Table 5. Gender wise distribution of the farm workers in sampled households

Particulars	Marginal	Small	Medium	Overall
Male	1.36 (55.74)	1.56 (51.32)	1.75 (55.21)	1.52 (53.90)
Female	1.08 (44.26)	1.48 (48.68)	1.42 (44.79)	1.3 (46.10)
Average number of farm workers	2.44 (100.00)	3.04 (100.00)	3.17 (100.00)	2.82 (100.00)

Figure in parentheses are average farm workers

Table 6. Farm category wise land utilization pattern of the sampled households

Particulars	Marginal	Small	Medium	Overall
Total cultivated area	0.53 (85.48)	1.00 (88.50)	1.53 (72.17)	0.91 (81.58)
IR	0.47 (75.81)	0.79 (69.91)	1.02 (48.11)	0.70 (62.99)
UIR	0.06 (9.68)	0.21 (18.58)	0.51 (24.06)	0.21 (18.60)
Area under field crops	0.39 (62.90)	0.54 (47.79)	0.82 (38.68)	0.53 (47.51)
Ghasni and permanent fallow land	0.04 (6.71)	0.05 (4.31)	0.39 (18.40)	0.11 (10.22)
Land put to non-agricultural use	0.05 (7.28)	0.07 (6.19)	0.52 (24.53)	0.15 (13.41)
Total land holding	0.62 (100.00)	1.13 (100.00)	2.12 (100.00)	1.12 (100.00)

Figures in parentheses are percentage to total land holding

Table 7. Farm category wise cropping pattern of the sampled households (Hectares)

Particulars		Marginal	Small	Medium	Overall
Kharif crops	Maize	0.08 (20.51)	0.15 (27.28)	0.37 (48.05)	0.16 (30.77)
	Tomato	0.14 (35.9)	0.16 (29.09)	0.16 (20.78)	0.15 (28.85)
	Capsicum	0.09 (23.08)	0.13 (23.64)	0.15 (19.48)	0.12 (23.08)
	Beans	0.08 (20.51)	0.11 (20)	0.09 (11.69)	0.09 (17.13)
	Sub-total	0.39 (100)	0.55 (100)	0.77 (100)	0.52 (100)
Rabi crops	Wheat	0.08 (20.51)	0.14 (29.09)	0.40 (49.38)	0.17 (32.08)
	Pea	0.16 (41.03)	0.18 (32.73)	0.22 (25.93)	0.18 (33.96)
	Cauliflower	0.15 (38.46)	0.21 (38.18)	0.20 (24.69)	0.19 (33.96)
	Sub-total	0.39 (100)	0.55 (100)	0.81 (100)	0.53 (100)
Orchard		0.14 (15.22)	0.46 (29.49)	0.71(31)	0.38 (26.57)
Gross cropped area		0.92 (100)	1.56 (100)	2.29 (100)	1.43 (100)
Net sown area		0.53	1.00	1.52	0.91
Cropping intensity		173.58	156	150.66	157.14

Figures in parentheses are percentage to gross cropped area.

The total area cultivated under cereal crop in rabi season crops was 0.17 hectares and 0.37 hectares' area was covered by vegetable crops. The cropping intensity was highest in case of marginal farmers 173.58 % followed by small 156.00 % and medium 150.66 % respectively. At overall level, the cropping intensity was found to be 157.14 % which indicates that there is a scope to improve farm management for better returns.

Income structure

To examine the relevant importance of different crops in the economy of sampled households, source wise break up of farm income of different categories of farm was analysed and has been summarized in Table 8. The data in table reveals that agriculture contributed about 82.27 % of total household income at overall level and was highest 88.34 % in marginal category and lowest in medium farm category 76.77 %.

The average gross returns from fruit crop contributed about 41.10 % towards the total income of sampled households in the study area. Vegetable cultivation contributed about 19.72 % to total household income. It is evident from the data that total income from all sources per annum was highest in case of medium farmers Rs. 3052291 and lowest in case of marginal farmers Rs. 1370494 and it was Rs. 1994352 in case of overall farm category.

Economics of selected vegetable crops

Vegetables occupy an important place in the food basket of the people of Himachal Pradesh. There exists a high demand for these crops in the market (14). The economics of selected vegetable crops, computed on per hectare basis, is presented in Table 9 and discussed below vegetable-wise.

Table 8. Farm category wise gross income (Rupees per annum)

Particulars		Marginal	Small	Medium	Overall
Kharif crops	Maize	3200 (0.23)	5808.7 (0.27)	15733.3 (0.52)	6706.67 (0.34)
	Tomato	52640 (3.84)	57869.6 (2.73)	64916.7 (2.13)	57100 (2.86)
	Capsicum	22524 (1.64)	29719.6 (1.40)	35875 (1.18)	27952.5 (1.40)
	Beans	10220 (0.75)	12934.8 (0.61)	11916.7 (0.39)	11600 (0.58)
Rabi crops	Pea	57240 (4.18)	85913 (4.05)	95625 (3.13)	75908.3 (3.81)
	Cauliflower	17843(13.02)	245526 (11.58)	227950 (7.47)	214057 (10.73)
Total Vegetables		32426 (23.66)	437772 (20.64)	452017 (14.81)	393324 (19.72)
Fruit crop		520450 (37.98)	836594 (39.45)	1410627 (46.22)	819674 (41.10)
Dairy		41673 (3.04)	29841 (1.41)	28449 (0.93)	34452 (1.73)
Total farm income		121064 (88.34)	174197 (82.15)	2343110 (76.77)	164077 (82.27)
Non -farm	Business	35874.8 (2.62)	89043.4 (4.20)	124647 (4.08)	74010.5 (3.71)
	Service	123976 (9.05)	289574 (13.66)	584534 (19.15)	279567 (14.02)
Total non-farm income		159851 (11.66)	378617 (17.85)	709181 (23.23)	353578 (17.73)
Total income		1370494 (100.00)	2120596(100.0)	3052291 (100.00)	1994352 (100.00)

Figure in parentheses are percentage to total income

Table 9. Economies of selected vegetable crops (Rupees/hectare)

Crop	Parameters	Marginal	Small	Medium	Overall
TOMATO	Total Cost of cultivation	127063	127805	130936	129036
	Yield (Quintal per hectare)	257	266	271	263
	Gross Returns	274795	265856	284464	273302
	Net Returns	147732	138051	153530	144266
	Cost of production Per Quintal	495	480	483	490
	Output- input ratio	2.16	2.08	2.17	2.12
CAULIFLOWER	Total Cost of cultivation	104001	103277	110101	104969
	Yield (Quintal per hectare)	234	242	250	240
	Gross Returns	229320	230713	230000	229990
	Net Returns	125319	127436	119899	125021
	Cost of production Per Quintal	444	428	440	437
	Output- input ratio	2.20	2.23	2.09	2.19
PEA	Total Cost of cultivation	121960	125005	134571	125675
	Yield (Quintal per hectare)	65	67	70	67
	Gross Returns	233025	238936	246750	238036
	Net Returns	111065	113931	112179	112361
	Cost of production Per Quintal	1876	1864	1922	1881
	Output- input ratio	1.91	1.91	1.83	1.89

Tomato

Per quintal cost of tomato production was calculated and is presented in Table 9. The overall cost of production per quintal came out to be 490 and it varied between 480 to 495 for different farm categories. Yield of tomato was found to be 257, 266 and 271 quintals per hectare for marginal, small and medium farms, respectively. The total cost of cultivation was highest for the medium farm category Rs. 130936 followed by small Rs.127805 and marginal farm category Rs. 127063. The overall net returns were Rs. 144266.

Cauliflower

The cost of cauliflower production was analysed and presented in Table 9. The per hectare cost of cultivation was found to be Rs. 104001, Rs. 103277 and Rs. 110101 for marginal, small and medium farm, respectively. Yield of cauliflower was found to be highest for the medium farm category 250 followed by small 242 and marginal farm category 234. Overall, it turned out to be 240. The overall net returns were Rs. 125021. The cost of production per quintal was found to be Rs. 444, Rs. 428 and Rs. 440 respectively. At an overall level, it was found to be Rs. 437.

Pea

The cost of pea production was analysed and presented in Table 9. The per hectare cost of cultivation was found to be highest for the medium farm category Rs.134571 and lowest for the marginal farm category Rs. 121960. Overall, it turned out to be Rs. 125675. Yield of pea was found to be 65, 67 and 70 quintals per hectare for marginal, small and medium farm categories. The overall net returns were Rs. 112361. The cost of production per quintal was found to be highest for medium farm category Rs. 1922 and lowest for the marginal farm category Rs. 1876. At an overall level it was found to be Rs. 1881.

Cost Structure of Selected Vegetables and Different Costs according to the Cost Concepts of CAC

The costs and returns structure has been reported for the production of major off-season vegetables, viz. tomato, cauliflower and peas in Kullu district (15). Different components of cost of production for the selected vegetable crops were estimated and have been presented in Table 10. Farm management costs (Cost A1, A2,C3), as per the guidelines of Commission for Agricultural Costs and Prices (CACP), have also been computed.

Tomato

The overall total cost on tomato production turned out to be Rs. 129036/ha. Expenditure on hired labour accounted for a major proportion 12.84 % of the cost, followed by costs on FYM 9.45 %, seed 7 % and fertilizers 3.67 %. The cost of hired human labour was more in medium farms than small and marginal farms. Labour was generally hired at the time of transplanting and harvesting/picking of the produce. Cost B2, which included the rent for leased-in land, came out to be Rs. 95290/ha. The Costs C1 and C2 gave the additional impression of the imputed cost of the family labour which amounted to be Rs. 93155/ha and Rs. 116498/ha respectively.

Cauliflower

The cost of hired labour accounted for 13.07 % of the total cost on cauliflower production which was Rs. 104969/ha followed by cost on seed/ seedlings 9.21% and fertilizer & manures 5.01 %. The cost of bullock labour required for ploughing and land preparation was estimated to be 4.81 % of the cost A1.

Table 10: Cost structure of selected vegetables and different costs according to the cost concepts of CACP.

	COST (Rupee)	Tomato				Cauliflower				Pea			
		Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Cost A1	Ploughing (Bullock labour / Tiller / Tractor)	4691	5030	5292	4941	4781	5292	5915	5203	5264	5487	5728	5442
	Seed	8976	9047	9146	9037	9695	9859	10729	9965	10150	11359	12656	11115
	FYM	11768	12195	13084	12195	11120	12568	13129	12077	9000	11304	13672	10818
	Fertilizers	4332	4918	5229	4736	5250	5576	5805	5486	3594	4096	4479	3964
	Plant protection	4272	4650	5020	4567	5170	5540	5960	5470	4250	4680	5120	4589
	Hired Labour	14232	17057	20508	16570	12937	14350	16263	14144	17284	19583	22443	19197
	Miscellaneous (Staking material, irrigation charges etc.)	6279	6728	6960	6587	3000	3250	3500	3196	5543	5987	6278	5860
	Interest on working capital	1114	1217	1332	1197	455	494	536	486	1125	1276	1437	1245
	Land Revenue	31	31	31	31	31	31	31	31	31	31	31	31
	Depreciation	5006	3860	5145	4604	5006	3860	5145	4604	5006	3860	5145	4604
	Total	60701	64733	71747	64465	57445	60819	67014	60662	61246	67663	76989	66864
Cost B1=(Cost A1+Interest on fixed capital)		68835	71005	80108	71947	65579	67092	75374	68143	69380	73935	85350	74345
Cost B2=Cost B1+Rental value of owned land)		92179	94349	103452	95290	88923	90435	98718	91487	92724	97279	108694	97689
Cost C1= Cost B1+ Imputed value of family labour)		91484	91854	99004	93155	76066	75456	82001	77044	94189	96559	105390	97363
Cost C2 = (Cost B2+ Imputed value of family labour)		114827	115198	117899	116498	99410	98800	105345	100388	117532	119903	128734	120706
C3 = (Cost C2+ Value of management input (10% of cost C2)		127063	127805	130936	129036	104001	103277	110101	104969	121960	125005	134571	125675

Peas

In peas also, the investment on hired labour constituted the highest proportion 15.27 % of the total cost, followed by investment on seed 8.84 %, FYM and fertilizers 6.8 %, staking 4.66 %, and ploughing 4.33 %. The cost C3 came out to be Rs. 121960 for marginal, Rs. 125005 for small and Rs. 134571 for medium farmers respectively.

Conclusion

Socio-economic indicator revealed that majority households in the study area were having joint families. The literacy index was low indicating below average quality of education. Agriculture is the main occupation in the study area as majority of the people were engaged in agriculture followed by private services, own business, government services, wage labourers and rural artisans. The average size of land holding indicated that major part of the land holding was under cultivated area and some part of it was under field crops at an overall farm category level. Cropping intensity was found highest in case of marginal farm followed by small farm and medium respectively which indicated that there is a scope to improve farm management for better returns. The main crops grown in the kharif season were maize, tomato, capsicum and beans and that in rabi season were pea, cauliflower and wheat. The most dominating vegetable in the kharif season was tomato and cauliflower and pea in the rabi season. The cost of cultivation was found to be highest on medium farms and minimum in case of farmers having 1-2 hectares only. The per hectare cost of cultivation of tomato was highest for medium farm category, followed by small and medium farm category. The cost of cultivation per hectare for cauliflower was highest in medium farm category followed by marginal and small farm category. The cost of cultivation of pea was found to be highest in medium farms and lowest in the marginal farms. Medium farmers earned highest net income by cultivating tomato crop. Small farmers earned highest net income by growing cauliflower and peas. For proper scheduling of farm activities, data on cost of cultivation of agricultural commodity provides useful information to the farm planners which will help them to identify the areas of economical advantage in producing different commodities as well as for the development of agro based industries. These data also help the farm planner in making proper allocation of available farm resources and increasing the efficiency of crop production through the introduction of improved agronomic practices. Therefore, such data enables the researcher of farm management to study efficiency of various cultivation practices and modify the crop planning for efficient farm management.

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Authors contributions

IM: carried out the experiment and wrote the draft manuscript, IM and NS: analysed the data, MKV: designed and supervised the study. All the authors read and approved the manuscript.

Compliance with ethical standards

Conflict of interest: . All authors declare that they agree on all parameters and have no conflict of interest.

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