Indian J Hill Farmg 12 (1 & 2) : 88–93 (1999)

Economics of Crop Production in Hills : A Case Study of Himachal Pradesh

D.C.Thakur*, J.P. Bhati** and K.D. Sharma*
*Deptt. of Agril. Economics, HPKV, Palampur–176062
** Deptt. of Economics, HPU, Shimla-5

The economic performance of the crops is judged on the basis of its cost structure and returns obtained per unit of area. The ultimate welfare of farming community is based upon sizeable production to earn more income. The plethora of farm studies have already demonstrated that income of farmers in hills per unit of land can be as high as in plains or even more if farmers follow intensive and scientific cropping systems and new technological farming approach (Thakur *et al.,* 1991). The production of high value crops like off-season vegetables, potato and alike offer more opportunity to earn higher farm income though accompanied by high cost of production (Moorti *et al.*, 1994).

Agriculture is the main occupation of the people of Himachal Pradesh. However, due to undulating topography the cultivation is limited only to 10% of the total geographical area of the state. Obviously, the per capita availability of arable land is very low . The climate of the state presents a congenial environment for the production of foodgrain and off-season vegetables. The foodgrain crops play a dominating role in farming accounting for almost 90 per cent of the cropped acreage of the state. A study of the area, productivity, economics of crops and structure of farm income in different agro-climatic regions of Himachal Pradesh was therefore initiated.

METHODOLOGY

The present study was carried out in 3 agro-climatic locations of Himachal Pradesh viz., low hills (below 650 m a.m.s.l), mid hills (650m - 1500 m a.m.s.l.) and high hills (above 1500 m a.m.s.l.). One district from each location was selected for the study. Hamirpur in low hills. Kullu in mid hills and Shimla in high hills were selected purposively. By employing cluster sampling, a cluster of three villages was selected randomly from each district/region. Finally, a sample of 100 farm households from each cluster was selected randomly.

The data on various aspects of farming were collected through personal survey method on a well designed survey schedule for the agricultural year 1993-94. Budgeting technique was employed to analyse the data and synthesise the findings of the study. The following concepts were employed in the study.

(i) Total Cropped Area (TCA) = $\sum$Ari
Where;
Ari = Area under ith crop (ha)

(ii) Crop Yield (Yi) = $\frac{Tpi}{Ari}$

Where,

Tp_i = Total farm production of I^{th} crop.

(iii) Gross Returns = y_I - PY_I + B_I

Where,

PY_I = Unit price of I^{th} crop output

B_I = Value of by-product from I^{th} crop.

(iv) Variable Cost (VC_I) = Variable Cost of I^{th} crop includes value of seed, FYM, fertilizers, human labour, bullock labour, pesticides, irrigation charges and interest on working capital.

(v) Net Returns (NR) = CR_I - VC_I

RESULTS AND DISCUSSION

Cropping Pattern

The cropping pattern on farm households in different agro-climatic locations in Himachal Pradesh is shown in Table 1.

Maize and wheat were found to be the major crops in all the hill regions of Himachal Pradesh. paddy was grown mainly in mid hill areas having had better irrigation facilities. Though potato was grown in all the regions yet it was the important cash crop of high hills where this crop is grown as a seed potato. Pea (vegetable) was also cultivated mainly in high hills as a off-season vegetable. Farmers were growing mainly local varieties of maize. However, in case of wheat and paddy, high yielding varieties except in high hills were grown. The cropping intensity was around 200% despite lesser irrigated area showing the intensive use of arable land in hills.

Average yield of paddy (Local + HYV) was fairly higher than maize and wheat in low and mid hill regions where the crop was mainly grown under irrigated conditions. However, under rainfed condition the performance of maize was stable and consistent in all the regions. The yield of wheat showed fluctuations from region to region ranging from 11 to 24 g/ha. Yield of wheat HYV and paddy HYV were appreciably higher than local varieties while there was no discernible difference in the yeild from local and HYV of maize. The yield of potato ranged between 72-86 q/ha in different regions which was quite low than the potential level of around 200 q/ha. Lack of irrigation in seed potato was found to be the major reason for its low yield in high hills. Similarly, the yield of peas was also low (57 q/ha) but lucrative prices ensured good returns to farmers from this crop.

ECONOMICS OF CROP PRODUCTION

A perusal of Table-3 clearly indicated the high income potential of vegetables and potato over all the cereal crops in low hill region. The highest gross as well as net returns per hectare

Table 1. Cropping pattern Patronized in Different Regions of Himachal Pradesh

(Per cent)

Particulars	Lower Hill	Mid Hill	High Hill
Kharif Crops			
Maize (L)	21.1	3.4	30.9
Maize (HYV)	17.9	28.6	-
Paddy (L)	3.2	1.7	6.0
Paddy (HYV)	3.2	13.5	-
Mash	0.5	-	2.7
Moong/Til	1.6	-	-
Vegetables (Kharif)	2.2	2.52	10.7
Others	0.5	0.84	-
Sub-Total (I)	50.3	50.4	50.3
Rabi Crops			
Wheat (L)	11.9	2.5	34.9
Wheat (HYV)	30.3	38.8	2.0
Barley (L)	2.7	3.4	5.4
Potato	1.1	2.5	-
Peas	-	-	7.4
Sarson/Toria	2.2	-	-
Vegetables (Rabi)	1.1	2.5	_
Others	0.5	0.8	-
Sub-Total (II)	49.7	49.6	49.7
Total cropped Area (I+II)	100.0	100.0	100.0
	(1.9)	1.2)	(1.5)
Cropping Intensity (%)	198.9	198.3	198.7

** Seed Potato (Kharif)*

Note: Figures in parentheses indicate total cropped area in hectares.

were found in case of potato followed by vegetable crops. Amongst the cereal crops, the net returns were higher in case of wheat followed by paddy and maize.

In mid-hill region too, the gross and net returns were highest for vegetables followed by potato. Among cereals wheat yielded higher gross as well as net returns.

In high hill region, the highest gross and net returns were found in case of potato followed by peas. Amongst the cereal crops, the net returns were found higher in case of wheat crop followed by maize and paddy. In relative terms the net returns were higher in mid hill region.

Table 2. Average yields of important crops (q/ha)

Particulars	Low Hill	Mid Hill	High Hill
Maize (L)	17.5	20.8	20.9
Maize (HYV)	19.5	29.6	–
Paddy (L)	21.0	31.8	17.6
Paddy (HYV)	21.9	36.8	–
Vegetables *(Kharif)*	28.3	138.1	–
Wheat (L)	17.5	21.4	16.1
Wheat (HYV)	19.7	24.4	18.8
Barley (L)	12.6	19.1	14.6
Potato	84.6	72.1	85.8
Peas	–	–	57.7
Vegetables *(Rabi)*	64.8	145.2	–

It can be concluded that vegetable crops were more remunerative than cereal crops in all the regions of the state.

STRUCTURE OF FARM INCOME

Per household average annual farm income in low hill region was estimated at Rs. 20826 (at 1993-94 prices) in which agriculture accounted for about 64% of the total farm income. The animal husbandry (dairy) contributed about 32% while the contribution of horticultural sector was found negligible (3.58%) in this region. This clearly shows the dominance of field crops especially foodgrains. In mid hill region also agriculture was the main contributor towards farm income accounting for about 55% of the total farm income (Rs. 25826) followed by horticulture (21%) and dairy (23%).

In high hill region, horticultural enterprise alone contributed 47% which was higher than agriculture. The structure and composition of farm income across the different regions varied. The share of horticulture increased from low hill to high hill regions of the state. Further, the absolute farm income was higher in high hill areas due to better returns from fruit gardens. However, the low and mid hill regions have better scope to increase farm income through the cultivation of vegetable crops and by enhancing the productivity of cereal crops.Though the cost of vegetable production is higher yet vegetable farming ensures 8-10 times higher income over cereal crops from one hectare of land. Therefore, necessary production and development strategies should be planned to raise the yield of crops in general and vegetable production in particular.

Table 3. Cost and Returns of Important Crops

Crops	Low-Hill			Mid-Hill			High-Hill		
	Gross Returns	Variable cost	Net Returns	Gross Returns	Variable Cost	Net Returns	Gross Returns	Variable Cost	Net Returns
Kharif									
Maize (L)	5382	2666	2716	6200	3329	2871	6230	2259	3971
Maize (HYV)	5872	3140	2732	8410	3193	5217	-	-	-
Paddy (L)	6655	3528	2727	8952	4400	4552	5392	3233	2159
Paddy (HYV)	6462	3398	3064	10202	4401	5801	-	-	-
Vegetables	7085	4286	2799	41431	7834	33597	-	-	-
Rabi									
Wheat (L)	6778	2932	3846	8055	3708	4347	6306	2568	3738
Wheat (HYV)	7504	3278	4226	9035	3311	5724	7200	2675	4525
Potato	19030	6438	12592	16232	8416	7816	19298	5552	13746
Vegetables	16210	4080	12130	43572	8373	35199	-	-	-
Peas	-	-	-	-	-	-	14435	3409	11026

Table-4. Composition of Farm Income

(RS/Farm)

Particulars	Low-Hill	Mid-Hill	High-Hill
Agriculture	13372 (64.2)	14263 (55.2)	12874 (41.0)
Horticulture	746 (3.6)	5502 (21.3)	14758 (47.0)
Animal Husbandry	6635 (31.9)	5965 (23.1)	3551 (11.3)
Allied Activity	73 (0.4)	96 (0.4)	191 (0.6)
Total	20826 (100)	25826 (100)	31374 (100)

Note: Figures in parentheses are percentages to total.

REFERENCES

Thakur, D.S Sharma, K.D. and Saini, A.S. (1991), *"Economics of Improved Farming Systems Developed for Faster Agricultural Development in Different Agro-climatic Zones of Hills"* Seminar Report, Deptt. of Agril. Econ., HPKV, Palampur; Publication No. 64.

Moorti, T.V. and Sharma, K.D. (1994), *"Status Report for the Catchment Area of Giri and Yamuna Hydro-Electric Projects in Himachal Pradesh"*, Deptt. of Agril.Econ., HPKV, Palampur; Publication No. 82.