

Crop Diversification in First Zone of Himachal Pradesh

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Abstract

The wide climate regime in Himachal Pradesh gives comparative advantage over other states for crop diversification. Himachal Pradesh is predominantly mountainous state and having 12 districts namely; Bilaspur, Chamba, Hamirpur, Kangra, Kinnaur, Kullu, Lahaul & Spiti, Mandi, Sirmaur, Shimla, Solan and Una. The state is divided into four zones according to altitude viz., Zone I, Zone II, Zone III and Zone IV. The study has been carried out in low hills sub-tropical zone (Zone I) of Himachal Pradesh. The district Una solely comes under the Zone I therefore taken as sample district for this research. The total area covered by paddy is 2.40 thousand hectare that comprises 4% of total cropped area. The maize covered 43% of total cropped area that is 27.25 thousand hectares. The maximum area covered by wheat that is 29.00 thousand hectares which shares 45% of total cropped area. The vegetables also shared considerable area which is 3% of total cropped area. The Herfindahl Index of district Una is 0.39 which falls medium to high diversification range. Amongst all developmental blocks Haroli block is highly diversified and Bangana block is least diversified. The result of diversification index shows that there is high scope to diversify the agriculture in Bangana block. Likewise in other parts of Zone I has high opportunity towards increase the crop diversification by ensuring the proper irrigation facility and other important factors of production.

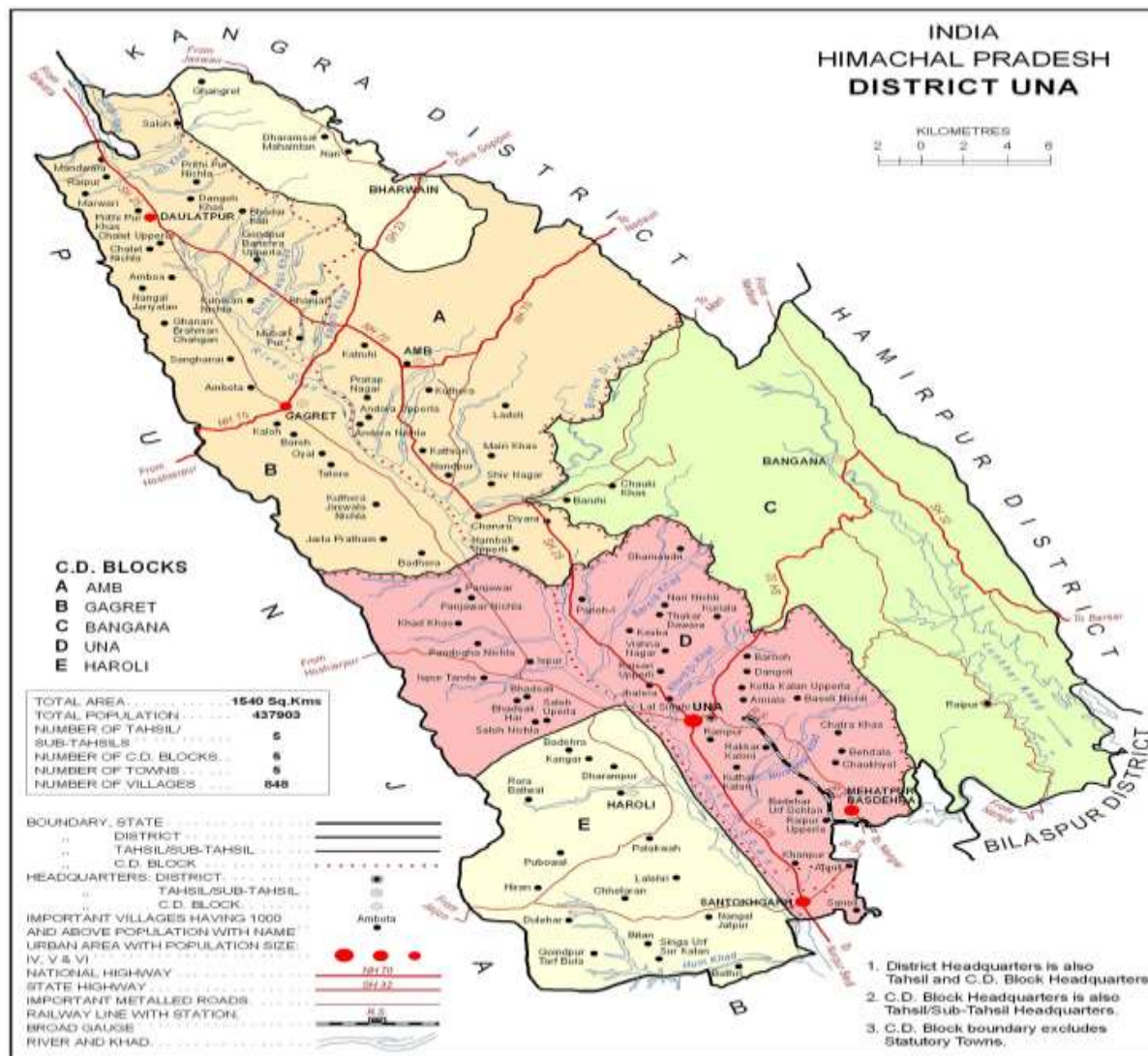
Key words: Crop diversification, Herfindahl Index, extent, factors, socio-economic

Introduction

The term crop diversification implies that the inclusion of relatively high remunerative crops along with conventional crops. It ensures the higher farm income and reduces the farm risks and uncertainties. The goal of crop diversification is sustaining the farm income with high nutritional security. The diversification of selected crops including traditional and agricultural crops, associated with regional comparative advantage, is recommended as an effective strategy to increase income, create employment and alleviate poverty in small and small households (Vyas, 1996; Joshi) et al., 2007). On a larger scale, this is a reflection of many economic indicators and poverty levels that compare favorably with the mountains and other developed regions. Small-scale experiences also show that diversification of crops to higher levels is economically beneficial and increases the pressure on the natural resource base (Chand, 1996; Sharma, 1996 and 2005; Sharma and Chauhan, 2008). This accomplishment has attracted the attention of development economists and policy makers, and the situation has become known as an example of other mountainous states (Dreze and Sen, 2002). The wide climate regime in Himachal Pradesh gives comparative advantage over other states for crop diversification. Himachal Pradesh is predominantly mountainous state and having 12 districts namely; Bilaspur, Chamba, Hamirpur, Kangra, Kinnaur, Kullu, Lahaul & Spiti, Mandi, Sirmaur, Shimla, Solan and Una. The state is divided into four zones according to altitude viz., Zone I, Zone II, Zone III and Zone IV. The study has been carried out in low hills sub-tropical zone (Zone I) of Himachal Pradesh. The district Una solely comes under the Zone I therefore taken as sample district for this research.

Material and methods

The study is carried out in the Una district. The data regarding area covered by major crops collected directly from the farmers and from agricultural departments. The primary and secondary data related to socio-economic parameter of the respondents were collected from all five developmental blocks of district Una. The developmental blocks are Amb, Bangana, Gagret, Haroli and Una, respectively.



To calculate the share of area covered by different crops; the following crops taken for consideration viz., paddy, maize, wheat, pulses, potato, ginger and vegetables. The following formula used for the same;

$$P_i = \frac{a_i}{\sum_{i=1}^n a_i}$$

Where, P_i is proportional area covered by i^{th} crop

a_i is area covered by i^{th} crop

To calculate the extent of crop diversification the Herfindahl Index has been used as;

$$HI = \sum P_i^2$$

The value HI ranges from 0 to 1; 0 reflects the complete diversification and 1 reflects the complete concentration.

Results and discussion

The important factors affecting the crop diversification observed as size of land holdings, family size, education of farmer, availability of farm labor, family income, irrigation facility etc.

Socio economic status of Una district

Block wise total population number of males and females, sex ratio and population density are studied to analyze the demography of Una district. The agricultural worker and unemployment level also studied for finding the factors affecting the crop diversification.

Table 1: Demographics of Una district

Block	Total Population	Male	Female	Sex Ratio	Area (km ²)	Density (Person/km ²)
Una	118598	60226	58372	969	215.72	534
Amb	95406	48381	47025	972	336.24	303
Gagret	83624	41745	41879	1003	251.99	337
Bangana	73035	36336	36699	1010	418.51	177
Haroli	102032	51710	50322	973	298.37	342

Source: Census of India, 2011.

Agricultural and non-agricultural worker in different blocks of Una district

From the demographic data, we can observe that the majority of the population is residing in the Una district itself accounting about 1,18,598. Of which the male population is more than the female. Under this district, majority of area and sex ratio was found to be higher under the Bangana block which also comprises the lowest density i.e. 177 person/km².

Table 2: Agricultural and non-agricultural worker in different blocks of Una district.

Block	Total Population	Agricultural worker		Non-Agricultural worker	
		Main	Total	Main	Total
Una	118598	9583	20467	22476	26104
Amb	95406	7351	17289	18198	22963
Gagret	83624	5851	17444	13159	17185
Bangana	73035	8110	26169	9945	12276
Haroli	102032	10194	20560	14637	17908

TOTAL			1,01,929		96,436
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Source: -Directorate of Agriculture, H.P.

From table 2, we can conclude that of the total population, majority of them are agricultural worker i.e. 1,01,929 in which Bangana block comprises the highest accounting about 26,169 followed by Haroli and Una. Under Amb block, peoples are engaged more under non-agricultural field (22,963) as compared to the agricultural (17,289). Being the district, una also comprises more of non-agricultural worker i.e. 26,104 over agricultural worker i.e. 20,467.

Unemployment status of Una district

Table 3: Number of unemployment in different blocks of Una district.

Block	Total	Male	Female	Unemployment		
				Total	Male	Female
Una	118598	60226	58372	72027	28276	43751
Amb	95406	48381	47025	55154	22309	32845
Gagret	83624	41745	41879	48995	19968	29027
Bangana	73035	36336	36699	34590	15889	18701
Haroli	102032	51710	50322	63564	23811	39753

Source: -Directorate of Agriculture, H.P.

As shown in the table 4, it was found that Una district comprises of the highest unemployment rate and least under Bangana block. It was also observed that the female unemployment rate is more than that of the male, which highlights the importance of motivating the females to work by introducing different schemes which will not only help in increasing the income but also their skill.

Table 4: Number of families and total villages in different blocks of Una district.

Block	Total Population	No. of families	Total Villages
Una	118598	24694	109
Amb	95406	20668	211
Gagret	83624	18395	91
Bangana	73035	15570	347
Haroli	102032	20494	86

Source: -Directorate of Agriculture, H.P.

Table 5 indicates the different blocks under una district viz. Una, Amb, Gagret, Bangana and Haroli. Total villages were recorded to be highest under the Bangana block (347) followed by Amb block (211) and least under the Gagret block (91). Number of families under the total villages was found to be maximum in Una block, accounting about 24,694 and minimum under Bangana block i.e. 15,570.

Extent of crop diversification

District Una comprises of mainly plains and slightly mountainous terrain therefore the major area covered by cereals along with potato. Seasonal vegetables are also being grown in the district. The main crops are paddy, wheat, maize, pulses, potato and vegetables. Among vegetables commonly cauliflower, cabbage, okra, cucumber, tomato and brinjal are being grown.

Table 5: Area and proportion of major crops in different blocks of district Una

Crop	Amb		Bangana		Gagret		Haroli		Una		Una District	
	A	P	A	P	A	P	A	P	A	P	A	P
Paddy	0.60	0.05	0.00	0.00	0.60	0.05	0.60	0.05	0.60	0.05	2.40	0.04
Maize	5.45	0.42	5.45	0.48	5.45	0.42	5.45	0.41	5.45	0.41	27.25	0.43
Wheat	6.00	0.46	5.00	0.44	6.00	0.46	6.00	0.45	6.00	0.46	29.00	0.45
Pulses	0.51	0.04	0.51	0.04	0.51	0.04	0.52	0.04	0.51	0.04	2.56	0.04
Potato	0.13	0.01	0.04	0.00	0.14	0.01	0.24	0.02	0.17	0.01	0.70	0.01
Ginger	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.05	0.00
Vegetables	0.43	0.03	0.30	0.03	0.43	0.03	0.45	0.03	0.45	0.03	2.04	0.03
HI		0.38		0.43		0.38		0.37		0.38		0.39

Source: - Directorate of Land Records, H.P.

The perusal of table: 6 reveals that paddy is being grown in all blocks except Bangana. The total area covered by paddy is 2.40 thousand hectare that comprises 4% of total cropped area. The maize covered 43% of total cropped area that is 27.25 thousand hectares. The maximum area covered by wheat that is 29.00 thousand hectares which shares 45% of total cropped area. The vegetables also shared considerable area which is 3% of total cropped area.

The Herfindahl Index of district Una is 0.39 which falls medium to high diversification range. Amongst all developmental blocks Haroli block is highly diversified and Bangana block is least diversified.

Conclusion

To analyse the extent of crop diversification in first zone of Himachal Pradesh, the district Una has been taken as sample district. The study found that the first zone is relatively low diversified than state diversification index. The Herfindahl Index of the district Una shows that first zone is moderately diversified. The major factors observed for low diversification were inadequate irrigation facility, small land holdings, low per capita income etc. To increase the farm income crop diversification can play important role and there is high opportunity in first zone of Himachal Pradesh. The result of diversification index shows that there is high scope to diversify the agriculture in Bangana block. Likewise in other parts of Zone I has high opportunity towards increase the crop diversification by ensuring the proper irrigation facility and other important factors of production.

References:

- Chand, R. (1996). Ecological and economic impact of horticultural development in the Himalayas: evidence from Himachal Pradesh. *Economic and Political Weekly*, A93-A99.
- Dreze, J., & Sen, A. (2002). *India: Development and participation*. Oxford University Press on Demand.
- Joshi, P. K., & Gulati, A. Ralph Cummings Jr.,(eds.)(2007). *Agricultural Diversification and Smallholders in South Asia*, Academic Foundation, New Delhi.
- Sharma, H. R. (1996). Mountain agricultural development processes and sustainability: Micro-level evidence from Himachal Pradesh, Indian Himalayas.
- Sharma, H. R. (2005). Agricultural development and crop diversification in Himachal Pradesh: understanding the patterns, processes, determinants and lessons. *Indian Journal of Agricultural Economics*, 60(902-2016-68013).
- Sharma, H. R. (2009). Rural Non-Farm Employment in Himachal Pradesh, 1971-2001-A District Level Analysis. *Indian Journal of Agricultural Economics*, 64(902-2016-67298).
- Sharma, H. R., & Chauhan, S. K. (2008). Diversification in agriculture in Himachal Pradesh: A success story. *Indian Farming*, 21(4).
- Sharma, H. R. (2011). Crop diversification in Himachal Pradesh: Patterns, determinants and challenges. *Indian Journal of Agricultural Economics*, 66(902-2016-67882).
- Vyas, V. S. (1996). Diversification in agriculture: concept, rationale and approaches. *Indian Journal of Agricultural Economics*, 51(4), 636.

