

# Land Utilization and Cropping Pattern in Himachal Pradesh

Dr. Sham Singh Bains<sup>1</sup>, Mr. Devinder Kumar Atlas<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Economics, Govt. P.G. College, Una, Himachal Pradesh, India

<sup>2</sup>Assistant Professor, Department of Commerce, Govt. P.G. College, Una, Himachal Pradesh, India

## ABSTRACT

Since the agricultural sector accounts for the lion's share in the Net State Domestic Product and employs more than two-third of the working population, its growth is vital for the growth of the State economy and consequently, the socio-economic upliftment of the rural masses. From this perspective, it is interesting to make a critical appraisal of the changing profile of agriculture in Himachal Pradesh. The present section gives an account of the changes in agriculture sector of Himachal Pradesh. A change in cropping patterns has been taking place in the State as elsewhere in the country. The shift in cropping pattern is normally advantageous and indicates a dynamic economy. The change depends upon the crops involved and the multifarious stimuli such as the changing economic, technological, and institutional factors. Food crops include cereals, pulses, vegetables, fruit crops, and spices together accounted for 96.00 per cent of the total cropped area while non-food crops shared the remaining. The area under fruit crops registered the highest increase i.e. 1.3 per cent in 1970-71 to 8.03 per cent in 2019-2020 followed by wheat, vegetables, maize, and spices. However, the area under two principal cereal crops i.e. paddy, barley, pulses and oilseeds are decreased. Pulses suffered a maximum decline, followed by barley, paddy, total non-food crops and total oilseeds during the reference period. The decrease in area under pulses and oilseeds might not be immediately disadvantageous to the farmers because of the present low-level output-input ratio of these crops, but nevertheless, it has national repercussions.

**KEYWORDS:** Land Utilization, Cropping Pattern, Production and Socio-Economic Upliftment

## INTRODUCTION

Cropping pattern means the proportion of area under different crops at a particular period of time. Cropping pattern indicates the level of development and the economic prosperity of the State. It deals with the nature of crops and percentage of area under each crop. A change in cropping pattern would mean a change in the proportion of the area of high value cash crops increases, it is likely to result in increase in the total return. Even if there is no increase in the yield rate or price provided, there is no simultaneous decrease in the proportionate area under other equally or valuable crops. The cropping pattern are determined in large measures by agro-climatic factors such as soil, temperature and rainfall distribution, i.e. the physical conditions of the region crops suited to the given conditions are grown and this is popularly

known as traditional cropping patterns of the region. Thus, while agro-climatic factors determine the conditions under which crops are grown, farmers are increasingly influenced by changes in economic, technological, institutional and policy induced factors. The main reason for unchanging cropping pattern in the country are social factors, such as density of population, customs, traditions, attitude towards material things, physical factors like soil, climate, rainfall, economic factors such as prices of input and outputs, farm size tenure, insurance against risk etc. These factors have an important bearing on the types of crop grown and the area devoted to different crops. Cropping activities are running throughout the year in India provided water is available for crops. The Indian agriculture is decided

**How to cite this paper:** Dr. Sham Singh Bains | Mr. Devinder Kumar Atlas "Land Utilization and Cropping Pattern in Himachal Pradesh" Published in International

Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-6 | Issue-2, February 2022, pp.1256-1264,



URL: [www.ijtsrd.com/papers/ijtsrd49407.pdf](http://www.ijtsrd.com/papers/ijtsrd49407.pdf)

Copyright © 2022 by author (s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



by the soil types and climatic parameters which determine overall agro-ecological setting for nourishment and appropriateness of a crop or set of crops for cultivation. There are three distinct crop seasons in India, namely Kharif, Rabi and Zaid. The Kharif season started with Southwest Monsoon under which the cultivation of tropical crops such as rice, cotton, jute, jowar, bajra and tur are cultivated. The Rabi season starts with the onset of winter in October-November and ends in March-April. Zaid is a short duration summer cropping season beginning after harvesting of Rabi crops. These crops are grown sole or mixed (mixed cropping) or in a definite rotation or sequence called rotational cropping. When the land is occupied by only one crop during one season, it is called mono cropping or by two crops it is known as double cropping which is grown in a year in the same land in sequences or by more than two crops, it is called multiple cropping. Thus, intensive cropping may be done either in sequence or three crops may be relay cropping which means one crop under sown in a standing crop. With wide round slow growing crops, companion crops may also be grown.

### Review of Literature

A general review of literature of the period shows that the researchers were very much interested in the changing level of land utilization and cropping pattern. Majhi and Kumar (2018) examined the changing cropping pattern in Indian agriculture based on secondary data from 2002-2003 to 2012-13 collected from various sources. They concluded that in the post-economic reforms period farmers are losing interest in cultivation because of structural changes in rural economy and they are increasingly moving towards non-farm activities leading to fall in agricultural productivity and output. The agricultural output declines due the above said structural changes in the landowning pattern in agriculture sector in India or movement of farm workers to non-farm activities and to the urban areas. Deka et al. (2018) examined the study on change in land use and cropping pattern in Assam, an economic analysis, based on secondary data from 1990-91 to 2015-16 collected from various sources. They concluded that the result was positive growth, i.e. 1.22 per cent in land put to non-agricultural uses, cultivable waste land, net area sown, total cropped area and area sown more than once. The increase in area under agricultural use may be attributed to various initiatives such as mission double cropping, bringing green revolution in Eastern India, RKVY etc. However, increase in area under non-agricultural uses was due to sharp increase in population of the state. Wali et al. (2019) examined the study on analysis of cropping pattern in Malaprabha project command

area in Karnataka based on primary and secondary data from 1999-2000 to 2017-18 collected from 50 farmers. It is evident from the transition probability matrix that the crops such as Hybrid maize, Hybrid sorghum and sunflower were having relatively stable acreage during the period. The probability that the Hybrid maize retained its share from one year to another year was 82.00 per cent during the period 1999-00 to 2017-18.

### Objective

The present study has been undertaken to achieve the following objective:-

1. To examine the demographic profile of the sample farm household.
2. To analysis the land utilization and cropping pattern under different crops.

### Data Source and Methodology

Study was carried out in Himachal Pradesh have been selected purposively for conducting the present empirical verification in the land utilization and cropping pattern of Himachal Pradesh. The study is based on secondary data. The secondary data has been collected from various government and individual publications as well from the different levels of administrative machineries. The related information had also been collected from the Directorate of Agriculture and Horticulture Himachal Pradesh, the Directorate of Land Records of Himachal Pradesh, Directorate of Agricultural Census. The statistical tools have been analyzed through simple percentage and average method and data has been presented in pie, bar and line diagram.

## RESULTS AND DISCUSSION

### Demographic profile of the sample farm households

The table 1.1 reveals that the comparative demographic trend of the state between 2001 to 2011 in Himachal Pradesh has a population of 68,64,602 persons which account for 0.57 per cent of country's population and ranked at 21<sup>st</sup> position amongst the State and Union Territories. The population of Himachal Pradesh has increased more than two times after independence and has grown at the rate of 12.94 per cent between 2001 to 2011. The density of population per sq. kilometers has increased to 123 person in 2011 from 109 persons per sq. kilometers in 2001.

Out of the total population, the number of males and females are 34,81,873 and 33,82,729 respectively which means the number of females per 1000 males is 972. The sex ratio of females per thousand males has been rising continuously in Himachal Pradesh from 968 in 2001 to 972 in 2011 census. The percentage of rural population is 89.97 per cent of the

total population residing in 17,495 inhabited villages. Himachal Pradesh has the highest percentage of rural population among all the states of the country. The table also shows that the overall literacy percentage of Himachal Pradesh is 82.80 per cent out of which 89.83 per cent are male literates and 75.95 per cent are female literate. It is comparatively much higher than the all India literacy rate which is 73.00 per cent. The literacy rate in Himachal Pradesh has been improving faster than all India figures. Himachal Pradesh is characterized by a very strong correlation between sex ratio (females per thousand males) and literacy. Districts which higher density of female population vis-à-vis male population have high literacy rates. Agriculture is the main occupation of the people of Himachal Pradesh. It provides direct employment to about 69.00 per cent of the total workers of the state. Out of the total geographical area 55.67 lakh hectares, the area of operational holdings is about 9.68 lakh hectares and is operated by 8.53 lakh farmers. The average holding is 1.04 hectare. According to 2011-12 agriculture census, 87.00 per cent of the total operational holdings are of marginal and small farmers, and about 12.60 per cent

of holdings are owned by semi-medium and medium farmers and only 0.4 per cent by large farmers. According to 2001 census, workers have been classified in the categories of cultivators, agricultural labourer, workers in household industry and others. The table 1.2 depicts the workforce for the period 2001 and 2011. The workforce increased from 29,92,461 in 2001 to 35,59,422 in 2011 recording a growth rate of 18.95 per cent as against 12.94 per cent growth in population over the same period. The growth in the number of main workers at 5.02 per cent during this period, is below the growth rate of population at 12.94 per cent, this certainly adds to the magnitude of unemployment. In the year 2001, the workforce constituted 49.24 per cent of the total population while in 2011 it accounted for 51.85 per cent. In the year 2001, the main workers constituted 32.31 per cent of the total population which accounted for 30.04 per cent in 2011. The marginal and non-workers constituted 16.92 per cent and 50.76 per cent in year 2001 and 21.81 per cent and 48.15 per cent to the total population respectively in year 2011. There is a sizeable increase in the workforce of marginal workers.

**Table - 1.1 Comparative Demographic Trend of Himachal Pradesh between 2001-2011**

Sr. No	Particulars	2001 Census	2011 Census
1	Population	60,77,900	68,64,602
	Male	30,87,940	34,81,873
	Percentage Total Population	50.81	50.72
	Female	29,89,960	33,82,729
	Percentage Total Population	49.19	49.28
2	Percentage of Urban Population to Total Population	9.8	10.03
3	Percentage of Rural Population to Total Population	90.2	89.97
4	Literacy	76.5	82.8
	Male	85.3	89.53
	Female	67.4	75.93
5	<b>Density of Population ( persons per sq. km)</b>	<b>109</b>	<b>123</b>
6	<b>Sex Ratio ( Female per 1000 males)</b>	<b>968</b>	<b>972</b>
7	<b>Decennial growth rate</b>	<b>17.54</b>	<b>12.94</b>

*Source: (i) Government of Himachal Pradesh, Statistical Outline of Himachal Pradesh, 2005- 06, Directorate of Economics and Statistics, Shimla, 2006, pp. 25 and 110.*

*(ii) Government of Himachal Pradesh, Statistical Outline of Himachal Pradesh, 2005- 06, Directorate of Economics and Statistics, Shimla, 2012, pp. 25.*

**Table-1.2 Percentage in Increase to Work Force 2001-2011 in Himachal Pradesh (in lakhs)**

Sr. No	Particulars	2001 Census	2011 Census	% increase
1	Population	60,70,900	68,64,602	12.94
2	Main Workers	19,63,883	20,62,501	5.02
3	Marginal Workers	10,28,579	14,96,921	45.53
4	Non-Workers	30,85,439	33,05,180	7.12
5	Total Workers	29,92,461	35,59,422	18.95

*Source; (i) Government of Himachal Pradesh, Statistical Outline of Himachal Pradesh, 2005- Directorate of Economics and Statistics, Shimla, 2005, pp. 40.*

*(ii) Government of Himachal Pradesh, Statistical Outline of Himachal Pradesh, 2012- 13, Directorate of Economics and Statistics, Shimla, 2012, pp.40-41.*

### Land Use Pattern in Himachal Pradesh

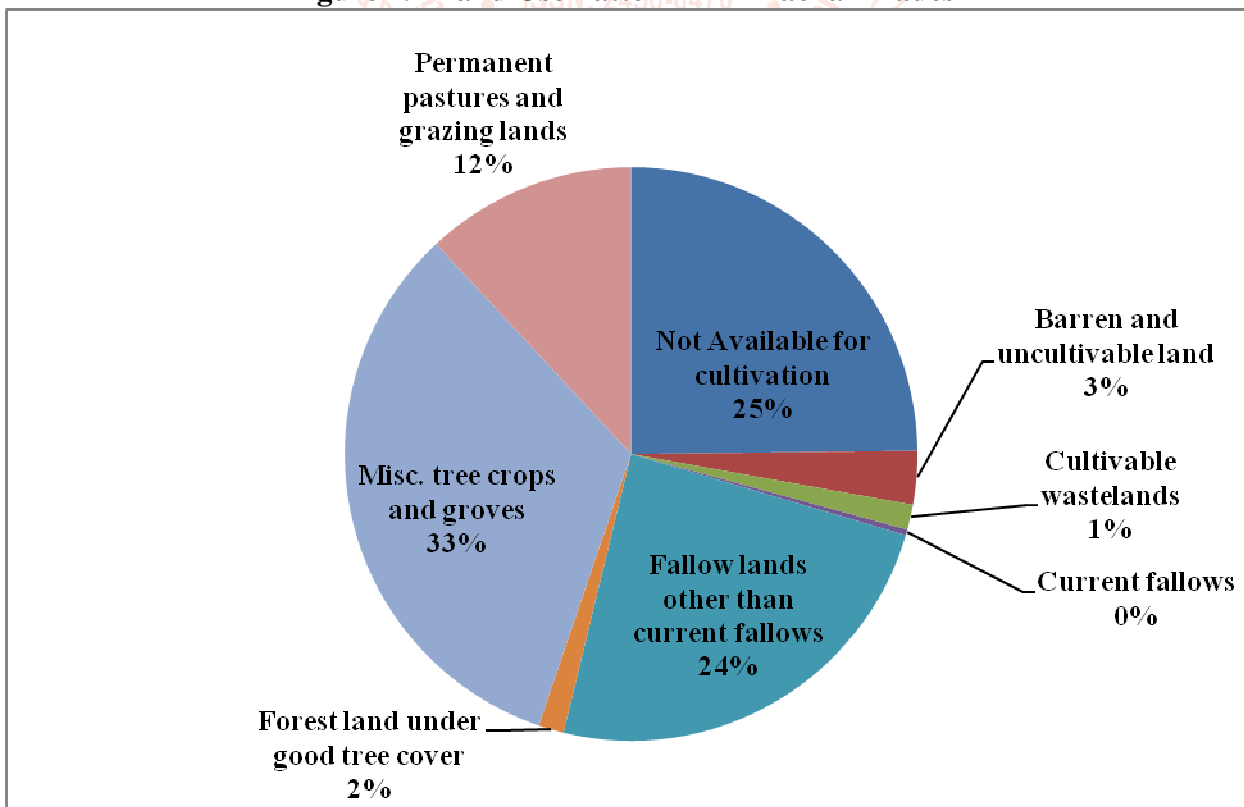
Agriculture in Himachal Pradesh is one of the most important sectors of its economy. Agriculture mainly depends on the natural resource that is land. Land availability, type of land and soil type are the main determinants of crops to be grown. Land use pattern has a great impact on the agricultural economy. The process of diversification within agriculture has now switched on to high value crops instead of low value crops that cause change in land utilization in agriculture. Change in cropping pattern is an essential part and common mode of diversification, which has great impacts on agricultural development and alleviation of rural poverty. The rapid increase in human and livestock population has resulted in a change in cropping pattern and intensity of land use. The table shows total geographical area of the country is 5567 lakh hectares in which 81.70 per cent area is reporting area which means that the area for which record is available. The net sown area has been accounted 11.90 per cent as per economic survey. The data shown in table 1.3 has been clearly presented in pie diagram 1.1.

**Table 1.3 Land Use Pattern in Himachal Pradesh**

Sr. No.	Category	Area in '000 ha (Lakh)	Percentage
1	Geographical Area	5567	
2	Reporting Area for land utilization	4549	100.0
3	Not Available for cultivation Barren and uncultivable land	1129	24.82
4	Cultivable wastelands	138	3.03
5	Current fallows	64	1.41
6	Fallow lands other than current fallows	15	0.33
7	Forest land under good tree cover	1101	24.21
8	Misc. tree crops and groves	65	1.43
9	Permanent pastures and grazing lands	1496	32.89
<b>10</b>	<b>Net sown area</b>	<b>541</b>	<b>11.90</b>
11	Gross sown area	951	
<b>12</b>	<b>Cropping Intensity</b>	<b>175.8</b>	

*Source: Government of Himachal Pradesh, Statistical Abstract of Himachal Pradesh 2017-18, Directorate of Land Record Shimla, 2011, pp. 42.*

**Figure 1.1 Land Use Pattern in Himachal Pradesh**



## Cropping Pattern in Himachal Pradesh

Vegetables are a rich source of vitamins and minerals and are essential for proper physical and mental growth of man. Their availability at lower cost would greatly help in keeping the people healthy and fit. In addition to their contribution to health improvement, their production also improves the economy of a country-state or region. These also generate employment in business and transport sector. Realizing its importance, the National Commission on Agriculture recommended that vegetable production should be increased by four times by the end of this century. In Himachal Pradesh efforts are on to reap the full advantage of the existing agro-climatic conditions and the farmers are being trained and guided to grow off-season vegetables like tomato, cauliflower, peas, hill capsicum, seed potatoes etc. They are grown on a large scale in Shimla, Solan and Kullu districts. Cropping patterns in different districts of Himachal Pradesh and the economy accruing out of the yield by the farmers has been extensively highlighted. Importance of agriculture in economic development is momentous and matter much. The agriculture sector plays a vital role in the Indian Economy.

As per the Govt. of Himachal Pradesh survey, agriculture contributes about 18.00 per cent of total GDP and provides **employment** to 50.00 per cent of the country's **workforce. India is the largest producer** of pulses, rice, wheat, spices and spice products in the world. It has many areas to choose for business such as dairy, meat, poultry, fisheries and food grains etc. India has emerged as the second largest producer of fruits and vegetables in the world. India exports a large quantity of agricultural materials like food grains, fruits, vegetables, pulses, tea, spices etc and the government is earning good revenue from it. There are many exporting products in which India is leading the world like tea and coffee etc. So, it is also making India proud in the sector of agriculture. Most part of the money circulates for the food items' purchasing which is good for financial growth and balance. India is an agriculture based country, where more than 50.00 per cent of population depends on agriculture and this is the main source of income. It is a fact that agriculture in India is the backbone of Indian economy. The contribution of agriculture in the initial two decades towards the total national output is between 48.00 per cent and 60.00 per cent. In the year 2001-2002, this contribution declined to around 26.00 per cent. The aggregate share of agriculture and allied sectors, including agribusiness, domesticated animal, and ranger service and fishery sub segments as far as rate of GDP is 13.90 per cent during 2016-17 at 2006-07 prices. Agricultural exports constitute fifth of the total exports of the country. In perspective of the over whelming position of the agricultural sector, gathering and support of agricultural statistics expect incredible significance.

Agriculture is the main occupation of the people of Himachal Pradesh, it occupies an important place in the economy of the state. It provides direct employment to people and the workers of the state. Cash crops are specifically grown for the purpose of selling rather than using or consuming it personally. Cash crops play a vital role in the economy of Himachal Pradesh by improving the income of the rural households. Cultivation of cash crops is labour intensive. Hence, it generates a lot of employment opportunities for the rural population. Vegetables are rich sources of vitamins, minerals, proteins; so referred as productive foods and contribute to the nutritional security of the people. These cash crops also provide an ample scope for achieving bio-diversity and diversification to maintain an ecological balance and to create a sustainable agriculture. Consequently, it will make significant impact on the state economy in the years to come. The economy of Himachal Pradesh largely depends on agriculture which still occupies a significant place in the state economy as 21.70 per cent of total state domestic product in 2013-14 was generated by agriculture and allied sectors and any fluctuations in the production of food grains affected the economy significantly. During the twelfth five year plan, 2012-17, emphasis has laid on production of off-season vegetables, potato, pulses and oilseeds besides cereal crops through timely and adequate supply of inputs bringing more area under irrigation, approach of watershed development, demonstration and effective dissemination of improved farm technology. The agriculture sector of Himachal Pradesh contributes over 45.00 per cent to the state's domestic product and nearly the entire population of the state depends directly on agriculture. As accorded in economic survey of Himachal Pradesh the major part of the revenue earning in the district economy is carried out by the cash crops. The Himachal Pradesh economy makes a lot of profit from raising cash crop vegetables. Farmers have engaged themselves highly in the fruit cultivation and fruits have become great blessing to the economy of the state. Some very important factors that have led to the outstanding development in the agriculture of Himachal Pradesh are efficient irrigation system, accessibility of low cost cargo and marketing facilities structured in an organized form. Himachal Pradesh agriculture provides employment to around 71.00 per cent of the working population in the state. The agriculture sector and the allied sector generate revenue of nearly 22.50 per cent of the gross domestic product of the state. In the present scenario of increasing cost, market prices fluctuation and climate damage, small holder agriculture becomes non- remunerative. As a result, rapid demographic changes have been observed and labour

migration towards cities has caused population imbalance in rural and urban India. In this context, the concept of family farming can be an alternative option to retain rural agriculture as remunerative enterprise. In India, about 70.00 per cent of the population is directly and indirectly related to agriculture. Among 615 million total farming families, 498 million are family farmers whose average land holding is 1.33 hectare. Agriculture happens to be the prime source of state income (GSDP). About 15.00 per cent of the total GSDP comes from agriculture and its allied sectors. Out of the total geographical area of 55.67 lakh hectare, the area of operational holdings is about 9.68 lakh hectares and it is operated by 9.33 lakh farmers. The average holding size comes to 1.04 hectare. Distribution of land holdings according to 2016-17 agricultural census shows that 87.03 per cent of the total holdings are of small and marginal farmers, 12.54 per cent of holdings are owned by semi medium and medium farmers and only 0.43 per cent by large farmers. The notion of modernization is not simple. It is a relative term. It is pertinent, however, to think of a traditional society gradually changing into modern society. But there may be different types of traditional societies. Farm sector uses land extensively; land is the first requisite for farming. There are various factors to be considered while starting a farm business. It would be wrong to select an inappropriate place for the type of farming to be done. Similarly it is hazardous to select a location in an unprogressive community or neighborhood where living conditions are undesirable. In order to avoid such hazards make help it to make possible. Land use pattern cannot be identical in all locations but varies according to physical and socio-economic conditions and supply of cultivated land is limited. Therefore, people have no alternative but to take horticulture and vegetable production, fruits and crop production because these give high returns of land per unit. Himachal Pradesh presents ideal conditions for growing cash crops. Cash crops as compared to the other crops give better return to growers. Earlier the economy of our state was fruit based but in the era of crop diversification, vegetable cultivation in Himachal Pradesh in general, has gained significance on account of favourable agro-climate conditions for growing quality off-season vegetables. This produce fetches high price in plain markets and thus encourages Himachal growers to take up vegetable cultivation as a profession which has improved the living standards of the peasantry.

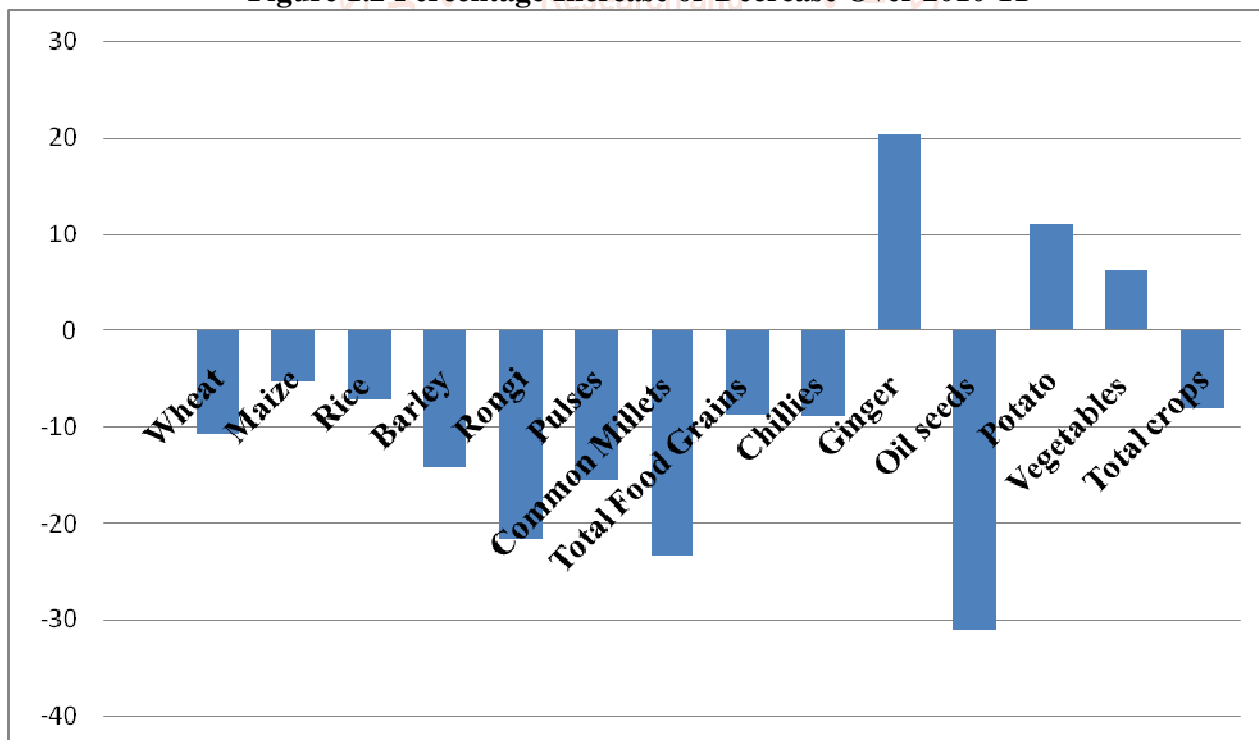
Cropping pattern is the proportion of area under various crops and at a point it changes over space and time. The cropping patterns of a region are closely influenced by the geo-climatic, socio-economic, historical and political factors. Patterns of crop, land use of a region are manifestation of combined influence of physical and human environment. Differences in attitude towards the rural land in the level of prosperity and technology have produced changes in emphasis. Their effects on both landscape and the land use studies are likely to be far reaching. Weather plays a decisive role in determining the existing cropping pattern. Cropping pattern is also dependent on terrain, topography, slope, soils and availability of water for irrigation, use of pesticides, fertilizers and mechanization. In simple words, cropping pattern means the production of area under various crops at a point of time. It is a dynamic concept because no cropping pattern can be said to be ideal for all times to a particular region. It changes in space and time with a view to meet requirements and is governed largely by the physical as well as cultural and technological factors. The changes in the cropping pattern in particular span of time clearly indicates the changes that have taken place in the agricultural development. These changes are brought about by socio-economic influence. In most of the situations, the physical environment reduces the choice of certain crops altogether or by reducing their level. Cropping pattern in Himachal Pradesh has not changed significantly over time and the new technology of agriculture production has not made a noticeable dent. The Pradesh enjoys a comparative advantage in the production of plantation crop, off season vegetables, fruits and flowers. There are a few research stations for agricultural development in the hills and new technology is available for developing the hill farming systems but very little of it has gone to the field. Out of the 9.41 lakhs hectares of the gross cropped area, the bulk is under food crops accounting for 9.13 lakhs hectares and of this 8.05 lakhs hectares under food grain cultivation, whereas, only 1.06 lakhs hectares areas in net irrigated area in the state during 2012-13. Land utilization and cropping pattern of the cash crops in Himachal Pradesh has been presented in table 1.4. In Himachal Pradesh, area under different crops were percentage increased and decreased from 2010-11 and 2017-18. The data shown in table 1.4 has been clearly presented in bar 1.2 and line diagram 1.3.

**Table 1.4 Percentage Distribution of Crop Wise Area for 2010-11 and 2017-18 in Himachal Pradesh**

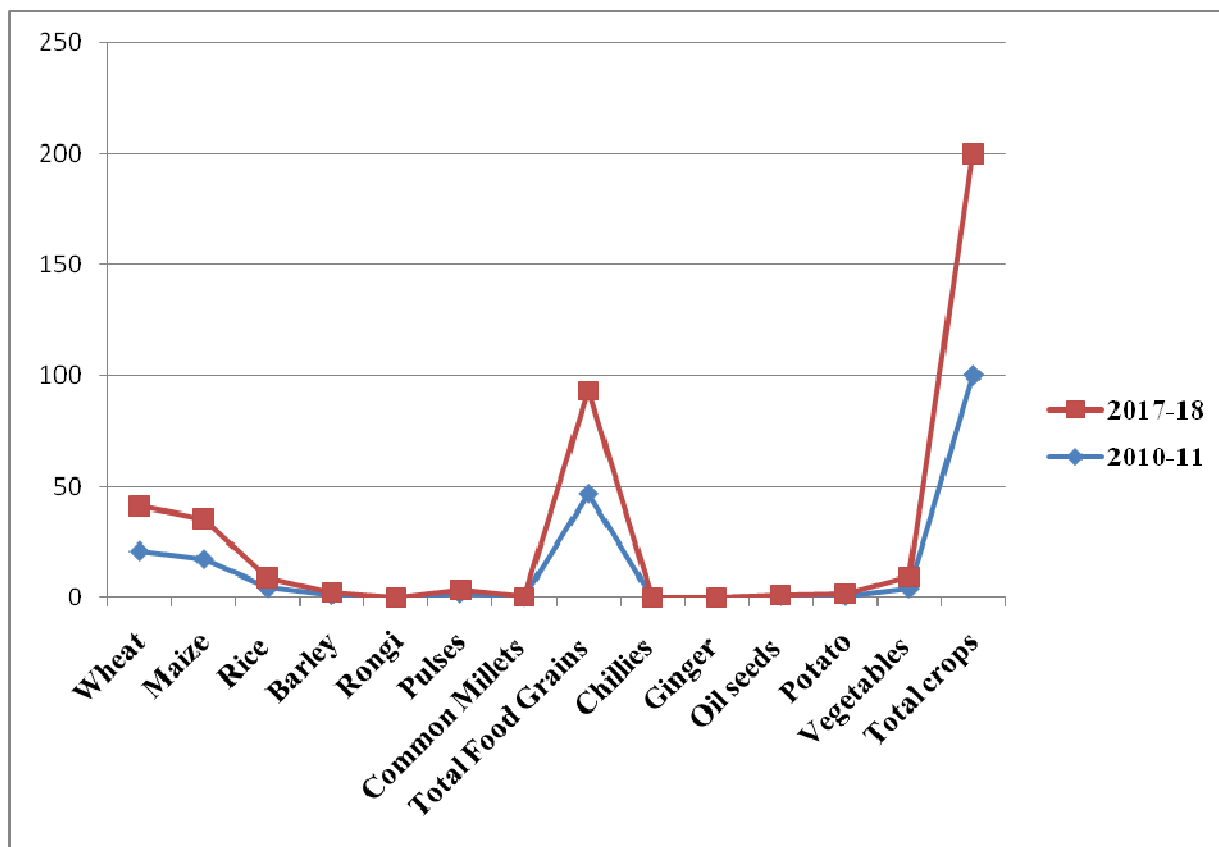
Sr. No.	Categories of Crops	2010-11		2017-18		% increase or decrease over 2011
		Area in hectare	% to total cropped area	Area in hectare	% to total cropped area	
1.	Wheat	357244	21.07	318874	20.48	-10.74
2.	Maize	296360	17.48	280811	18.03	-5.25
3.	Rice	77064	4.55	71613	4.60	-7.07
4.	Barley	22339	1.32	19160	1.23	-14.23
5.	Rongi	2321	0.14	1817	0.12	-21.71
6.	Pulses	33696	1.99	28466	1.83	-15.52
7.	Common Millets	5723	0.34	4098	0.26	-23.39
8.	Total Food Grains	794757	46.88	724839	46.55	-8.80
9.	Chillies	728	0.04	663	0.04	-8.93
10.	Ginger	2082	0.12	2505	0.16	20.32
11.	Oil seeds	14283	0.84	9839	0.63	-31.11
12.	Potato	14685	0.87	15875	1.02	11.15
13.	Vegetables	73894	4.36	78680	5.05	6.35
14.	Total crops	1695176	100.00	1557240	100.00	-8.14

Source: Government of Himachal Pradesh, Statistical Abstract of Himachal Pradesh 2017-18, of Directorate of Economics and Statistics, Shimla, 2018, pp. 39.

**Figure 1.2 Percentage Increase or Decrease Over 2010-11**



**Figure 1.3 Percentage Change in Crop Wise Area for 2010-11 and 2017-18**



### Conclusion

It is concluded that India being a vast country of continental dimension presents wide variations in agro-climatic conditions. Such variations have led to the evolution of regional niches for various crops. Historically, regions were often associated with the crops in which they specialize for various agronomic, climatic hydro-geological. With the technological changes encompassing bio-chemical, irrigation and technologies, the agronomic niches and undergoing significant changes. With the advent of irrigation and new farm technologies, the yield level of most crops especially that of cereals has witnessed an upward shift making, that leads to obtain a given level of output with reduced area or more output with a given level of area and creating thereby the condition for inter-crop area shift without much disturbance in output level. In the face of these new changes including the achievement of food self-sufficiency, the area shift that tended towards cereals in the immediate aftermath of the green evolution, has started moving in the opposition direction i.e. from cereals to non cereals. Agricultural diversification towards high value cash crops including fruits and vegetable crops in Himachal Pradesh especially in certain areas in the district of Shimla, Kullu, Una, Solan, Kinnor and Lahual-Spiti, started in the late sixties which gathered pace in the seventies and eighties.

### References

- [1] V. S. Wali, R. Poddar, S. M. Mundinamani and B. S. Yenagi, "An Analysis of Cropping Pattern in Malaprabha Project Command Area in Karnataka", *Yojana*, Vol. 11, Issue 2, New Delhi, January 2019, pp. 7739-7742.
- [2] Vinayak Jalikatti and R. S. Poddar, "An Economic Analysis of Changing Cropping Pattern in Almatti Command Area of Karnataka", *International Journal of Current Microbiology and Applied Sciences*, Vol. 8, No. 10, Chennai, Tamil Nadu, October 2019, pp. 1052-1059.
- [3] A. A. Kharat, K. V. Deshmukh and R. D. Shelke, "Growth Action of Land Utilization Pattern in Jalna District of Maharashtra State, India", *International Journal of Current Microbiology and Applied Sciences*, Vol. 8, No. 5, Chennai, Tamil Nadu, May 2019, pp. 1857-1862.
- [4] Anand Kumar and Kuljit Singh, "An Analysis of Crop Diversification in Rup Nagar District of Punjab", *Agricultural Economics Research Review*, Vol. 7, Issue-6, New Delhi, April 2019, pp. 270-274.
- [5] S. S. Tyagi and M. C. Panchal, "Cropping Pattern and Land Use Changes in the Villages of North India", *Agricultural Economics Research Centre University of Delhi*, New Delhi, 1985, p. 1.



- [6] Ram Asrey, Postharvest Handling and Marketing of Fruits and Vegetables, *African-Asian Journal of Rural Development*, Vol. 48. No. 2, New Delhi, June 2015, pp. 64-81.
- [7] “India, geographically mirror”, *Statistical Facts about India*, [www.indianmirror.com](http://www.indianmirror.com), 2006, pp. 10-26.
- [8] Government of Himachal Pradesh, *Economic Survey*, Directorate of Economics and Statistics, Shimla, 2015, p. 144.
- [9] Majid Husain, “Cropping Pattern from Cultivation of Low Value Crops to High Value Crops”, *International Education and Research Journal*, Vol. 2, No. 4, Ahmadabad, Gujarat, September 1996, pp. 217-218.
- [10] Government of Himachal Pradesh, *Annual Season and Crop Report*, Director Land Record, Shimla, 2010-11, pp. 14-15.
- [11] Government of Himachal Pradesh, *Report on Agricultural Census*, Directorate of Agricultural Census, Shimla, 2006, p. 84.
- [12] Government of Himachal Pradesh, *Statistical Abstract of Himachal Pradesh 2018-19*.
- [13] Directorate of Economics and Statistics, Shimla, April 2018, p. 28-30.
- [14] Government of Himachal Pradesh, *Annual Season and Crop Report*, Director Land Record, Shimla, 2010-11, pp. 14-15.

