



## Usage of agriculture and greenhouse cultivation in Himachal Pradesh: The district-wise analysis

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### Abstract

Himachal Pradesh is engulfed in lush green landscape known for forests, horticulture and agricultural production based upon organic farming. At present, land available for cultivation out of the total land holdings in Himachal Pradesh is 75.3 percent of the total area and 85.9 percent of total area in India. Out of the total geographical area of 55.67 lakhs hectare, the area of operational holdings is about 9.55 lakhs hectares and is operated by 9.61 lakhs farmers in Himachal Pradesh. The average holding size is about 1.00 hectare. The distribution of land holdings according to Agricultural Census shows that 87.95 percent of the total holdings are Small and Marginal holdings. Further, about 11.71 percent of holdings are owned by Semi Medium and Medium farmers and only 0.34 percent by large farmers. Agriculture and greenhouse cultivation has become popularized in all the districts of Himachal Pradesh although the pace of growth varies extensively. The study emphasizes upon district-wise usage of agriculture and greenhouse cultivation of the State.

**Keywords:** usage of agriculture and greenhouse, organic farming

### Introduction

Himachal Pradesh is engulfed in lush green landscape known for forests, horticulture and agricultural production based upon organic farming. At present, land available for cultivation out of the total land holdings in Himachal Pradesh is 75.3 percent of the total area and 85.9 percent of total area in India. Further, Net Area sown is 11.9 percent of the total cultivable area in the State as compared to 45.8 percent that of the Country. It is further pertinent to mention that this sector has good chances of yield and earning as it is being facilitated by resources. In Himachal Pradesh, 20 percent of the net cropped area is equipped with the irrigation facilities. Having such a relevant sector of the national economy, agriculture sector needs to be prioritized in terms of encouraging the usage of technology. Interestingly, Out of the total geographical area of 55.67 lakhs hectare, the area of operational holdings is about 9.55 lakhs hectares and is operated by 9.61 lakhs farmers in Himachal Pradesh. The average holding size is about 1.00 hectare. The distribution of land holdings according to Agricultural Census shows that 87.95 percent of the total holdings are Small and Marginal holdings. Further, about 11.71 percent of holdings are owned by Semi Medium and Medium farmers and only 0.34 percent by large farmers. The study emphasizes upon district-wise usage of agriculture and greenhouse cultivation of the State.

### Objectives

The research endows to accomplish the following objectives

- To analyze district-wise demographic statistics of agricultural performance in Himachal Pradesh
- To examine the performance of District-wise Poly houses under Pandit Deen Dayal Upadhyaya Kisan Bagwan Yojana in terms of area covered.

### Methodology

The study is based upon secondary data taken from the official record of the Directorate of Economics and Statistics, Govt. of Himachal Pradesh and other Govt. departments. Data has been analyzed by applying descriptive tools of research including percentage and proportions to identify per capita values.

### Analysis and discussion

To achieve the objectives of the present research, based upon the data analyzed the following discussion and analysis are endowed to conclude the research findings thereby recommending pertinent measures.

### District-wise demographic statistics of agricultural performance in Himachal Pradesh

With a view to understand and compute the district-wise usage of the agriculture as per the demographic statistics of Himachal Pradesh, analyses have been drawn as under:

**Table 1:** District-wise demographic statistics of agricultural performance in Himachal Pradesh

District	Area (hectare)	Cropping area (hectare)	Net area sown (hectare)	Irrigated area (hectare)	Population	No. of holding	Population density	Population covered/cropping area	Cropping area / household	Cropping area (% of area)	Net sown area (% of cropping area)	Irrigated area (% of cropping area)	Land area / household
Bilaspur	116700	56010	29815	6824	3,82,056	26823	327	6.8	2.1	48.0	53.2	12.2	4.3
Chamba	652800	66825	41864	3545	5,18,844	25297	80	7.8	2.6	10.2	62.6	5.3	25.8
Hamirpur	111800	67867	34841	1734	4,54,293	32572	406	6.7	2.1	60.7	51.3	2.5	3.4
Kangra	573900	209410	116800	35687	15,07,223	93662	263	7.2	2.2	36.5	55.8	17.0	6.1

Kinnaur	640100	10091	8256	5474	84,298	1697	13	8.3	5.9	1.6	81.8	54.2	377.2
Kullu	550300	58874	36471	2679	4,37,474	20299	79	7.4	2.9	10.6	61.9	4.5	27.1
Lahaul-spiti	1383300	3489	3397	3397	31,528	110	2	9.0	31.7	0.2	97.4	97.4	12575.4
Mandi	395100	160103	90806	12693	9,99,518	68582	253	6.2	2.3	40.5	56.7	7.9	5.8
Shimla	513100	87951	70524	2558	8,13,384	18331	159	9.2	4.8	17.1	80.2	2.9	28.0
Sirmaur	282500	75316	40068	14812	5,30,164	34620	188	7.0	2.2	26.7	53.2	19.7	8.2
Solan	193600	60738	35905	9672	5,76,670	23739	298	9.5	2.5	31.4	59.1	15.9	8.1
Una	154900	75188	38809	15306	5,21,057	36166	338	6.9	2.1	48.5	51.6	20.3	4.3
Total	5567300	931862	547556	114381	68,56,509	381898	123	7.3	2.4	16.7	58.7	12.3	14.6

Source: statistical abstract of Himachal Pradesh, directorate of statistics and economics, Shimla

The foregoing table-1 regarding demographic statistics in relation to district-wise cropping in Himachal Pradesh indicates diversity of the distribution of land area of the districts as well as the disparity in terms of cropping area, net sown area, irrigated area, population and the number of holdings of the districts. In Himachal Pradesh, the population density is 123 persons per square kilometer. However, it varies widely being 406 in district Hamirpur and just 2 in district Lahaul-Spiti. Obviously, such a wide gap in the density of population is indicative of variation in the cropping related resources and other demographic characteristics. The results indicate that one hectare cropping area is catering to 7 persons in the State. As per the district-wise analysis of population per cropping area, the study finds that in district Solan, it is 9 to 10 persons per hectare while in district Mandi, it is 6 persons per hectare. The population covered per hectare in Shimla is 9 and in Bilaspur, it is 6 to 7 persons. It is pertinent to mention that every hectare of the cropping land in the State is catering to two households and this proportion is seen in the majority of the districts except Lahaul-Spiti, Shimla and Kinnaur and slightly more in Kullu, Solan and Chamba districts. Needless to mention that the great majority of the land area of the State is not being used for production purposes as cropping area is just 16.7 percent of the land area. The results indicate that usage of land for cropping is much low in the tribal regions particularly in Lahaul-Spiti (0.2 %). Lahaul-Spiti and Kinnaur are the tribal regions where population density is also very low (2 in Lahaul-Spiti and 13 in Kinnaur). On the contrary, the districts in the lower regions have higher proportion of cropping area in comparison to the other regions or districts. In this regard, Hamirpur has 60.7 percent cropping area of its total land area and Una and Bilaspur have 48.5 and 40.0 percent

cropping area respectively of their land area. Unfortunately, the cropping area is not being sown fully which is a demotivating factor to develop agriculture in connection to employability as only 58.7 percent of the cropping area is the net sown area except the regions which are having low cropping area like Lahaul-Spiti, Kinnaur and Shimla having Net Sown area more than 80 percent of their cropping area. The precarious situation does not end with the result that the Net Sown area is very low in comparison to the cropping area, it adds with the finding that the irrigated area is just 12.3 percent of the cropping area. Further, percentage of irrigated area is less than 20 percent of the cropping area in the districts except Lahaul-Spiti (97.4 %) and Kinnaur (54.2%). The study finds that each hectare in the State has been used in average by 14 to 15 households. However, the average number of households in the districts is less than 10 per hectare of total land area of the State except Lahaul-Spiti, Shimla, Kinnaur, Kullu and Chamba districts.

**Growth in greenhouse cultivation**

Greenhouse cultivation has got a boost over the past one decade in Himachal Pradesh. The Government has launched schemes to apply the technology and popularize protected cultivation in the poly houses. Horticulture Technology Mission and Deen Dayal Upadhyaya Kisan Bagwan Yojana have been implemented in the districts and consequently, poly houses have been set where crops were cultivated in small as well as large scale commercial purposes. As per the report of the department of agriculture, only under the Deen Dayal Upadhyaya Kisan Bagwan Yojana till March 2011, 67.26 hectare of land was used for poly houses. The following table depicts the district-wise number of different categories and area under poly houses till March 2011 under this Yojana.

**Table 2:** District-wise Area in Poly houses under Pandit Deen Dayal Upadhyaya Kisan Bagwan Yojana (Till March 2011)

District	Poly Tunnels (6m <sup>2</sup> )			Small Poly Houses (up to 252 m <sup>2</sup> )			Large Poly Houses (>252 m <sup>2</sup> )			Total		
	Number	Rank	Area (ha)	Number	Rank	Area (ha)	Number	Rank	Area (ha)	Number	Rank	Area (ha)
Bilaspur	233	6	0.140	177	4	4.00	126	1	7.26	536	7	11.41
Chamba	109	8	0.065	171	6	2.56	15	9	0.77	295	8	3.39
Hamirpur	365	4	0.219	356	2	4.33	28	7	3.98	629	4	8.52
Kangra	87	9	0.052	376	1	3.95	78	3	5.85	541	6	9.85
Kinnaur	-	12	0.000	32	12	0.13	-	10	0.00	32	12	0.13
Kullu	596	3	0.358	110	9	1.41	20	8	1.23	726	3	3.00
Lahaul-spiti	127	7	0.076	58	11	0.23	-	10	0.00	185	10	0.31
Mandi	1052	1	0.631	196	7	1.96	94	2	4.61	1342	1	7.20
Shimla	264	5	0.158	256	3	3.55	28	7	1.97	548	5	5.67
Sirmaur	86	10	0.052	150	8	3.64	38	6	2.44	274	9	6.12
Solan	697	2	0.418	173	5	3.15	44	5	2.27	914	2	5.84
Una	6	11	0.004	64	10	1.51	68	4	4.29	138	11	5.81
Total	3622	1	2.173	2119	2	30.42	539	3	34.67	6280		67.26

Source: Directorate of Agriculture, Government of Himachal Pradesh, Shimla

The most common feature of the setting of the poly houses is that they yield high level of productivity at a very low land area. In terms of ranking of the number of Poly Tunnels, Small Poly houses and large poly houses, they are respectively ranked in the same order. Now, as per each category-wise ranking of the number of poly houses in the districts, the data indicates that the according to the number of Poly Tunnels set in the State, District Mandi is placed at rank one with 1052 Poly Tunnels out of total number of 3622 poly tunnels in 0.631 hectare area. The study finds that setting-up of poly tunnels has been popularized even in the tribal region of Lahaul-Spiti where 127 poly tunnels have been set. Out of twelve districts, in terms of setting-up of the poly tunnels, District Solan can be considered at the moderate level with 697 and the other districts including Shimla and Bilaspur are at the lower level. The top most districts in terms of the number of poly tunnels set are; Mandi, Solan and Kullu. In District Una and Kinnaur setting-up of the poly tunnels could not be popularized as per the data as there were only 6 poly tunnels at Una and there was not any poly tunnel at Kinnaur.

Small poly houses rank at second position as per their number in the State. According to the data, 2119 small poly houses in 30.42 hectare area were set and district Kangra has registered the maximum number of such poly houses (376) which covered 3.95 hectare area. Needless to state that except three districts *viz.* Kinnaur, Lahaul-Spiti and Una, there is almost a consistent figure of the number of small poly houses set in all other districts as the number has exceeded one hundred in all the districts. The top three districts in terms of the setting-up of small poly houses are; Kangra, Hamirpur and Shimla. On the contrary, at the bottom of ranking in terms of the number of Small Poly Houses, the districts are; Kinnaur, Lahaul-Spiti and Una.

Large Poly Houses were just 539 at third rank though they were set in 34.67 hectare area. The top three districts as per the number of Large Poly Houses is concerned, are Bilaspur, Mandi and Kangra. Out of 539 poly houses, Bilaspur had 126 poly houses in 7.26 hectare area. It is interesting to notice that except district, Bilaspur, in all the other districts, the number of Large Poly Houses has been recorded less than one hundred. The districts which are considered as the tribal regions of the State like Kinnaur and Lahaul-Spiti did not have any such poly house.

Overall, the study analyzes that in terms of the setting-up of the poly houses in the state, the chronological order of the ranking of the districts is as; Mandi (1342), Solan (914), Kullu (726), Hamirpur (629), Shimla (548), Kangra (541), Bilaspur (536), Chamba (295), Sirmour (274), Lahaul-Spiti (185), Una (138) and Kinnaur (32).

### Conclusion and suggestions

In Himachal Pradesh, agriculture sector being the purveyor of the great majority of population having 75.3 percent of the land area available for cultivation is still able to contribute only to 12 to 14 percent of the State Gross Domestic Product. From the results it is summarized that one hectare cropping area is catering to 7 persons in the State. Population density varies widely being 406 in district Hamirpur and just 2 in district Lahaul-spiti. According to the research analysis, one hectare cropping area is catering to 7 persons in the State. In district Solan, it is 9 to 10 persons per hectare while in district Mandi, it is 6 persons per hectare. The population covered per hectare in Shimla is

9 and in Bilaspur, it is 6 to 7 persons while every hectare of the cropping land in the State is catering to two households. great majority of the land area of the State is not being used for production purposes as cropping area is just 16.7 percent of the land area. The cropping area is not being sown fully which is a de-motivating factor to develop agriculture in connection to employability as only 58.7 percent of the cropping area is the net sown area. The irrigated area is just 12.3 percent of the cropping area. Further, each hectare in the State has been used in average by 14 to 15 households. However, the average number of households in the districts is less than 10 per hectare of total land area of the State except Lahaul-spiti, Shimla, Kinnaur, Kullu and Chamba districts.

Under Pandit Deen Dayal Upadhyaya Kisan Bagwan Yojana, as per each category-wise ranking of the number of poly houses in the districts, Poly tunnels are at the top followed by small poly houses and then large poly houses. Interestingly, the tribal regions which are known for high quality of production of crops are lagging behind in terms of net sown area of the cropping land and covered under poly houses. Whereas, the Government has initiated special packages to uplift the communities living in these areas by providing them better job opportunities. If agricultural production in these areas is boosted-up in these areas and people are involved to adopt the technology by following poly house concept, much better employment avenues can be provided to them and the motive of the government can be achieved.

Based upon the above conclusion, the following measures are suggested

- Since irrigated area of the districts is just 20 percent of the land area, it is mandatory to construct irrigation projects.
- There is a need to ensure facilities to the students getting graduation and higher degrees from the agriculture, horticulture and the related areas to motivate them for adopting this sector for employment and the unexplored or unsown cropping area be sown.
- There is a need to provide special packages for people of tribal areas for constructing poly houses and utilizing land for production purposes.

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