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Pandit Deen Dayal Upadhyaya kisan bagwan yojana and greenhouse cultivation In Himachal Pradesh: The district-wise analysis

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Abstract
Agriculture sector is contributing 17 to 18 percent in the Gross Value Added in India. Contribution of agriculture sector in Gross Value Added in India at current prices has grown by 8.5 percent and Gross Value Added in Himachal Pradesh at current prices has grown by 10.6 percent. Gross State Value Added accounts for 93 to 94 percent of the Gross State Domestic Product of Himachal Pradesh where agriculture sector is the purveyor of the great majority of population having 75.3 percent of the land area available for cultivation. Pandit Deen Dayal Upadhyaya Kisan Bagwan Yojana is a revolutionary initiative to strengthen the agricultural sector and to boost-up the economy of farmers. The motive of the scheme is to enhance and encourage technological involvement in agricultural activities by supporting farmers in terms of financial support and in other manners. Greenhouse cultivation is one of the bold steps in this direction which is supported by the Government of India having multiplicity of advantages. The present research analyzes the scheme in context to greenhouse cultivation in Himachal Pradesh.

Keywords: Pandit deen dayal Upadhyaya, growth in greenhouse, contribution of agriculture

Introduction

Concept and rationales

Agriculture sector is contributing 17 to 18 percent in the Gross Value Added in India. Contribution of agriculture sector in Gross Value Added in India at current prices has grown by 8.5 percent and Gross Value Added in Himachal Pradesh at current prices has grown by 10.6 percent. Gross State Value Added accounts for 93 to 94 percent of the Gross State Domestic Product of Himachal Pradesh where agriculture sector is the purveyor of the great majority of population having 75.3 percent of the land area available for cultivation. Population density varies widely being 406 in district Hamirpur and just 2 in district Lahaul-spiti. Still 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. Further, the irrigated area is just 12.3 percent of the cropping area. Pandit Deen Dayal Upadhyaya Kisan Bagwan Yojana is initiated to support greenhouse cultivation by supporting cultivators for construction of polyhouses and in other ways. It is a revolutionary initiative to strengthen the agricultural sector and to boost-up the economy of farmers. The motive of the scheme is to enhance and encourage technological involvement in agricultural activities by supporting farmers in terms of financial support and in other manners. Greenhouse cultivation is one of the bold steps in this direction which is supported by the Government of India having multiplicity of advantages. The present research analyzes the scheme in context to greenhouse cultivation in Himachal Pradesh.

Objectives

1. To pin-point the district-wise Demographic Statistics of Himachal Pradesh
2. To examine district-wise Area in Poly houses under Pandit Deen Dayal Upadhyaya Kisan Bagwan Yojana.

Research methodology and implication

The study is based upon the secondary data collected from the official websites of the related departments of Government of Himachal Pradesh and the printed reports. Data has been suitably presented and analyzed by using simple descriptive tools of research. The results have been accordingly interpreted and inferences have been drawn. Based upon the research findings, measures have been recommended. The research will be useful for new researchers interested to go into the details of researches on greenhouse cultivation.

Analysis and discussion

The analysis drawn as per the data used in the present research is discussed as under:

1. District-wise demographic statistics of 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 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 to7 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 de-motivating 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.

2. 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^2)			Small Poly Houses (up to 252 m^2)			Large Poly Houses (>252 m^2)			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).

Summary

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 Population density varies widely being 406 in district Hamirpur and just 2 in district Lahaul-spiti. Still 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. Further, the irrigated area is just 12.3 percent of the cropping area.

Pandit Deen Dayal Upadhyaya Kisan Bagwan Yojana as per each category-wise ranking of the number of poly houses in the districts, 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. 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. District Kangra has registered the maximum number of small poly houses (376) which covered 3.95 hectare area. The top three districts in terms of the setting-up of small poly houses are; Kangra, Hamirpur and Shimla. Out of 539 large poly houses, Bilaspur had 126 poly houses in 7.26 hectare area. 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).

Suggestions

Based upon the research findings, the following measures are suggested:

Since population covered per cropping area in the districts is similar, whereas, there exists disparity of land area per households covered in the districts, there is a need to encourage people belonging to such areas where population density of the district is low to adopt agriculture as employable avenue for which, the financial institutions and the government has to provide more facilities. Further, greenhouse cultivation needs to be promoted in all the districts. The provisions of the Deen Dayal Upadhyay Kisan Bagwan Yojana must be propagated to young enthusiastic persons to motivate and involve them in agriculture and greenhouse cultivation.

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