IMPACT OF PROTECTED FARMING ON INCOME, EMPLOYMENT AND HOUSEHOLD ASSETS IN DISTRICT HAMIRPUR OF HIMACHAL PRADESH

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Abstract

The protected cultivation technology holds special significance for hilly states like Himachal Pradesh where arable land is scarce due to uneven terrain and holdings are small and fragmented. A number of polyhouses has been constructed throughout the state under PDDKBSY. The government has been spending a very huge amount on protected farming. Hence, it was felt imperative to examine the impact of polyhouse farming on income, employment and household assets. Hence, a study was conducted in Hamirpur district of Himachal Pradesh to assess the impact of protected farming on income, employment and household assets from sample of 150 polyhouse farmers in three selected blocks of the district. The polyhouse were classified into three categories, i.e. small (i.e.40 m^2), medium (i.e.250 m^2) and large (i.e.500 m^2). Primary data were gathered by questionnaire method and secondary data was conducted from different available sources.

Keyword: protected farming, income, employment and household assets.

1.INTRODUCTION

The economy of Himachal Pradesh is third fastest growing economy in India. Agriculture contributes nearly 45 per cent to the net state domestic product. It is the main source of income as well as employment in Himachal. About 93 per cent of the state population depends directly upon agriculture. To achieve faster and more inclusive growth in the Eleventh Five Year Plan, the Department of Agriculture, Himachal Pradesh has prepared a project on production of cash crops by adoption of precision farming practices through polyhouse cultivation.[1] The most significant in this regard is 'Pandit Deen Dayal Kisan Baagwaan Samridhi Yojana,' a flagship programme for the upliftment of farmers in the state. The project provides for 80 percent subsidy to farmers for land up to 1000 square meters for developing polyhouses and to establish sprinklers and drip irrigation systems, the remaining 20 per cent is to be borne by the farmer himself. The scheme has been launched with the assistance of NABARD RIDF-IV Tranche. This project has been implemented in all the twelve districts of the state with an outlay of Rs. 353.01 crores. This project comprises of two parts, production of cash crops through adoption of precision farming practices through polyhouse cultivation for Rs. 154.92 crores and project on diversification of agriculture through micro-irrigation and other related infrastructure for Rs. 198.08 crores. The project has been launched in January 2009 for four years. Over the period of four years an area of about 2.59 lakh sq. meters is intended to be covered under the polyhouse cultivation. It envisages construction of 16500 polyhouses and bringing 20,000-hectare area under micro irrigation. Though the subsidy provided is 80 percent for BPL families, constructing polyhouses, the state government has decided to reduce the beneficiary share from 20 percent to 10 percent. Thus, such families will get a ninety percent subsidy. According to the information as provided by the department of agriculture, polyhouses have been constructed in 55.02 hectares of land in 2009-10 as against the targeted 48.88 hectares. For this an assistance of Rs. 24.24 crores were released to the farmer on account of construction of 4,796 polyhouses. [2]

A number of studies has been conducted on the various issues relating to the impact of protected cultivation on

production, productivity, income, employment, ecology, climate changes, the nature of cropping pattern, extent of crop diversification, land use pattern, adoption process of new technology, source of information about new technology and emerging threats, rural non-farm economy and determinants of cropping pattern and diversification for high value cash crops etc. The findings of the studies revealed that protected cultivation process has increased net farm income, intensive utilization of land and employment opportunities of farming communities

2.MATERIAL AND METHODS

As we know under the protected cultivation, off-seasonal crops are grown. Main aim of the PDDKBSY was to enhance the income of the beneficiary families and provide gainful employment, especially, on the marginal and small farms. Therefore, an attempt has been made to examine the impact of polyhouses farming on farm income, employment and household assets in the study area.

2.1. *Objectives*

The present study has been undertaken to achieve the following objectives: i) to study the socio-economic profile of the sample farms ii) to study the impact of protected cultivation on income, employment and household assets of the sample farmers.

2.2. *Methodology*

The present study has been conducted in Hamirpur District of Himachal Pradesh. A sample of 150 polyhouse farmers involved in cucumber cultivation under protected farming has been selected on purposive random sampling technique. The polyhouse growers were classified into three categories viz. small (40 m^2), Medium (250^2) and large (500 m^2) with the sample size of 50, 70 and 30 from each size of polyhouse respectively. The collection of information is based on a structured questionnaire designed to collect relevant information on family size, land holding, cropping pattern, production, factors for production and factor cost etc. In the present paper, the impact of protected cultivation analysed by using simple percentage method.

3.RESULTS AND DISCUSSION

3.1. Average Family Size, Percentage of Family Work Force, and Percentage of Dependents among the Sample Farms

The average size of family, percentage of labour force and the percentage of dependents among the sample farms has been presented in table I. The average size of family has been worked out, 6.88, 6.84 and 9.33 per cent on the small, medium and large size of farms respectively. The average size of family among all the sample farms together came out 7.35 as compared to the average size of family at the State level as a whole i.e. 4.66 according to 2011 census. Thus, as the farm size increases, almost the average size of family also increases. It shows that as the economic status of a household improves, they become more social. The percentage of labour force has been worked out 68.90, 63.67.08 and 61.30 per cent on the small, medium and large size of farms group respectively. Among all the farms together, this percentage came out 64.88 per cent. The percentage of dependents is the highest on the medium size of farms group (i.e. 36.32 per cent) as compared to the other class of farms. Among all the holding groups together, this percentage of dependents came out 35.12. Thus, the percentage ratio of labour force shows almost a decreasing tendency with an increase in the size of farms whereas, contrary to it, the percentage of dependents shows an increasing tendency with an increase in the size of farms. The lowest percentage of the dependent is on the small size of farms group mainly due to higher percentage of work force as compared to the medium and large size of farms.

4.CONTRIBUTION OF PROTECTED CULTIVATION IN HOUSEHOLD INCOME, EMPLOYMENT AND HOUSEHOLD ASSETS

4.1. Contribution of Polyhouse Cultivation in Total Household Income

Main aim of the PDDKBSY was to enhance the income of the beneficiary families and provide gainful employment, especially, on the marginal and small farms. Therefore, an attempt has been made to examine the impact of polyhouses farming on farm income, employment and household assets in the study area. The table reveals that polyhouses farming contributed

19.65 per cent of the gross household income at overall level. The large category earned the higher proportion, i.e.31.24 per cent as compared to the medium 23.14 per cent and small (i.e. 3.21per cent). The contribution of farm income excluding polyhouse income has been worked out 23.31 percent. The contribution of field crops to total household income came out 25.21 per cent on the small size of farms, followed by 23.02 and 21.71 per cent on the medium and large size of farms. The gross household income at farm income was little bit higher than polyhouses farming because in polyhouses farming the small polyhouse units are contributing very small amount to total, i.e. 3.21 per cent. The table reveals that contribution of off-farm income to total household income has been worked out 69.10, 50.37 and 43.50 per cent on the small, medium and large size of polyhouse growers. Among all size of farms it has been worked out 53.82 per cent to the total household income from all sources.

The contribution of other income sources to total household income has been worked out, i.e. 3.09 per cent among all sample size of farms. It has been worked out 2.48, 3.20 and 3.55 per cent on the small, medium and large size of farms respectively.

4.2. Employment Generation through Polyhouses Farming

Polyhouses cultivation is both the capital- and labour-intensive avocation. Labour is one of the most important and critical resource for polyhouses farming. Polyhouses farming requires skilled and trained labourers.

Polyhouses cultivation has also generated substantial on farm employment in the study area. The additional employment of 14.51 mandays/farm on the small, 110.61 mandays/farm on the medium and 206.66 mandays/farm on the large categories of polyhouse has been created. Capsicum and Tomato accounted more than 75 per cent of total employment on both the categories. Least amount of labour was increased in the small size of polyhouse units as there size was small and it was also not attractive for commercial point of view.

In case of tomato, the small category of polyhouses generated the maximum labour, i.e. 31.91 per cent, followed by 31.31 and 29.49 per cent on the large and medium size of polyhouses respectively. Among all size of holding it was calculated 30.38 per cent. In case of capsicum, employment generation per farm was found 48.24, 48.91 and 46.92 per cent on the small, medium and large size of polyhouse units, respectively. It was observed that 48.04 per cent employment was generated among all sample size of farms. In case of cucumber least amount of employment was generated as it is easier to grown cucumber under polyhouses than tomato and capsicum. Among all the sample size of holding 21.79 per cent employment was generated. The table further revealed that 19.85, 21.60 and 21.77 per cent employment was generated on the small, medium and large categories of polyhouses. Thus, it can be concluded that polyhouses farming technology has increased income, income and employment opportunities in the study area. From the table, it is clear that small units of polyhouses generated 14.51 labour mandays, medium size of polyhouses generated 110.61 labour mandays per farm and the large category of polyhouses generated 206.66 labour mandays per farm under polyhouses farming.

4.3. Impact of Polyhouses farming on Household Assets

The quantitive and qualitative possession of the household assets particularly land, livestock and house buildings are the symbol of socioeconomic development and prosperity among households in the society particularly in rural society. The distribution pattern of household assets both productive assets and household durables generated from the polyhouse farming among the sample households has been presented in the table 4. In the present study, all those household assets have been treated productive which directly provide gainful employment opportunities to the family human labour and increase the household income. The household productive assets, include: land, livestock, agricultural implements, machinery, tools etc.

The table revealed the percentage increase in the value of livestock was 14.30 per cent between the period of 2007-08 to 2012-13 on the small size of farms, whereas it has been increased by 60.86 per cent of the total value of household assets in 2012-13 on the medium size of farms. In case of large size of polyhouse farms, it has increased by 50.00 per cent during the year 2012-13 due the cultivation under polyhouses farming. Among all the farms together the value of livestock has been increased by 37.15 per cent. The table shows that

the highest per cent increase in the value of livestock has been worked out in case of medium size of farms, i.e. 60.86.

The agricultural implements and machinery used by the small households are both traditional as well as modern which are either made locally or supplied by the agriculture department on the subsidized rates. The percentage increase in the value of agriculture implements has been worked 33.33, 200.00 and 194.10 per cent on the small, medium and large size of polyhouses respectively during 2012-13. Among all the farms together this percentage increased by 196.80 per cent in 2012-13 because growers were spending more amount on agricultural implements to earn more and more profits. The above position showed that the higher investment on the agricultural implements by the medium size of farms for higher agricultural production were mainly because of the reason that higher farms groups can afford to spend their income on the purchase of implements/ machinery. Similarly, the percentage increase in the value of other productive assets in comparison to 2007-08 came out 66.70, 500.00 and 200.00 per cent on the small, medium and large size of farms respectively during the period of 2012-13. The percentage increase in value of this item among all the size of farms came out 241.90 between the periods of 2007-08 to 2012-13. The percentage increase in the value of productive assets in compared to 2007-08 came out 17.90, 137.31 and 89.96 per cent on the small, medium and large size of sample farms respectively during the period of 2012-13. Among all the sample size of farms it has been worked out 155.82 per cent. From the table, it is clear that after the adoption of polyhouses farming farmers were spending higher amount of their hard-earned money to purchase the productive assets in order to get more and more profits and income.

The value of household durable, i.e. furnishing articles, utensils, electrical appliances and bedding etc. also varies sharply from one size of farm groups to the other over the periods of 2007-08 to 2012-13. The variation in the distribution of these durables necessarily indicated the variation in the socio-economic conditions of the sample households but had a negligible direct effect on the pattern of household income and employment. The increase in the value of furniture over the period of 2007-08 has been out 44.64 per cent among all the sample size of farms. Individually, the percentage value has been increased by 71.40, 77.80 and 22.20 per cent on the small, medium and large size of farms respectively. As compared to the value of electrical appliances in 2007-08, it has increased by 66.70, 185.70 and 42.90 per cent on the small, medium and large size if farms respectively during the period 2012-13. The percentage value of utensils has been increased by 50.00, 166.70 and 100.00 per cent on the small, medium and large size of farms respectively between the periods of 2007-08 to 2012-13. Among all sample size of farms it has been worked out 106.20 per cent during the period of 2012-13.

The value of electrical appliance showed an increasing tendency with an increase in the size of farms mainly because of the higher capacity of purchasing power. The percentage increase in the value of beddings has been worked out 22.20, 111.10 and 100.00 on the small, medium and large size of polyhouse farms respectively between the periods of 2007-08 to 2012-13. The percentage increase in the value of buildings among all sample farms have been worked out 65.40 per cent of which 50.00, 66.70 and 71.40 per cent on the small, medium and large sample size of farms respectively. The percentage increase in value of household durables to the total value of household assets has been worked out 50.00, 75.80 and 63.80 per cent on the small, medium and large sample size of farms respectively. Among all size of sample farms it has been worked out 65.70 per cent.

The higher size of farms indicated that the higher holding groups with higher source of income invest their income on the construction of buildings which is also an indicative of economic prosperity and richness in the rural society. Thus, above distribution pattern of productive household assets signifies that there are unequal distribution of these assets among the various holding groups. The forgoing analysis revealed that there was increase in the value of household assets of polyhouses growers from 2007-08 to 2012-13. By adopting modern technology of vegetable farming growers are earning handsome amount so this technology helped to improve grower's standard of living.

Further, it can be concluded from the present study that before the polyhouses farming, livestock and field crops were the main sources of farm income. But after the

adoption of the polyhouses farming, there was discernible in income in the farm income among all farms size, i.e. Rs. 7516.00, Rs.70800.00 and Rs. 105563 from the tomato, capsicum and cucumber respectively. The total increase in the income of farmers from polyhouses farming has been worked out Rs.56657.93. The farm employment potential under different crops viz. tomato, capsicum and cucumber among all sample farms has also analysed which revealed that during the protected cultivation was very helpful in employment generation. Crops grown under polyhouses farming were generating more employment in comparison to traditional practices as it is clear from the figures. It is further, analysed that there was increase in the value of household assets of polyhouse growers from 2007-08 to 2012-13 by adopting the modern technology of vegetable farming, growers are earning handsome amount so this technology helped to improve grower's standard of living.

Table 1. Average Family Size, Percentage of Family Work Force, and percentage of Dependents among the Sample Farms

Sr. No.	Particulars	Among the Sample Farms			
		Small	**Medium**	**Large**	**All farms**
1	Total	50	70	30	150
2	Total	344	479	279	1102
3	Average	6.88	6.84	9.3	7.35
4	**Percentage of Family Work Force**				
a)	Male	109 (66.06)	165 (70.21)	111 (68.52)	385 (68.51)
b)	Female	130 (72.63)	140 (57.38)	60 (51.29)	330 (61.11)
c)	Total	239 (68.90)	305 (63.67)	171 (61.30)	715 (64.88)
5	**Percentage of Dependents**				
a)	Males	56 (33.93)	70 (29.78)	51 (31.48)	186 (33.09)
b)	Females	49 (27.37)	104 (42.62)	57 (48.71)	210 (38.88)
c)	Total	105 (30.52)	174 (36.32)	108 (38.70)	387 (35.12)
6	**Literacy Percentage**				
a)	Male	165 (94.50)	235 (96.20)	162 (98.80)	572 (96.70)
b)	Female	179 (82.60)	244 (86.10)	117 (90.60)	542 (86.40)
c)	Total	344 (88.80)	479 (91.00)	279 (95.3)	1102 (91.60)

Note: Figure in parenthesis indicates percentage to total family members of each category.

Table 2. Contribution of Polyhouse Cultivation in Total Household Income (Rs/farm)

Sr. No.	Sources of household Income	Small Farms	Medium Farms	Large Farms	All Farms
1	Farm income (excluding polyhouse income	58957 (25.21)	70433 (23.02)	73364 9 (21.71)	67193.87 (23.31)
2	Polyhouse income	7516 (3.21)	70800 (23.14)	10556 3 (31.24)	56657.93 (19.65)
3	Off-farm income	16157 8 (69.10)	15412 3 (50.37)	14700 0 (43.50)	155183.4 (53.82)
4	Others	5789 (2.48)	9800 (3.20)	12000 (3.55)	8903 (3.09)
4	Total household Income from all sources	23384 0 (100.00)	30595 6 (100.00)	33792 7 (100.00)	288311.53 (100.00)

Note: Figures in parenthesis denotes percentage to the total household income

Table 3. Employment Generation through Polyhouses Farming (mandays/farm)

Sr. No.	Particulars	Small Farms	Medium Farms	Large Farms	All Farms
1	Tomato	4.63 (31.91)	32.62 (29.49)	64.71 (31.31)	29.71 (30.38)
2	Capsicum	7.00 (48.24)	54.10 (48.91)	96.97 (46.92)	46.97 (48.04)
3	Cucumber	2.88 (19.85)	23.89 (21.60)	44.98 (21.77)	21.10 (21.58)
4	Total	14.51 (100.00)	110.61 (100.00)	206.66 (100.00)	96.86 (100.00)

Table 4. Impact of Polyhouses Farming on Household Assets of Sample Farms

A	Productive Assets	Sample size of farms											
		Small Farms			Medium Farms			Large Farms			All farms		
		2007-08	2012-13	% of change	2007-08	2012-13	% of change	2007-08	2012-13	% of change	2007-08	2012-13	% of change
1	Livestock	70000	80000	14.3	25000	40214.20	60.86	100000	150000	50.0	55000	75433.29	37.15
2	Agricultural	3000	4000	33.3	15000	45000	200.0	17000	50000	194.10	11400	32333.33	183.63
3	Machineries	2000	3000)	50.00	9000	22000	144.4	7500	20000	166.70	6366.67	15266	139.79
4	Others	3000	5000	66.70	2500	15000	500.0	15000	45000	200.00	3766.67	17666.67	241.94
5	**Sub-total of Productive assets**	78000	92000	17.90	51500	122214.2	137.3	139500	265000	90.00	76533.33	140699.96	155.82
B	**Household Durables**												
6	Furnishing articles	7000	12000	71.40	9000	16000	77.8	45000	55000	22.20	15533.33	22466.67	44.64
7	Electrical appliances	6000	10000	66.70	7000	20000	185.7	70000	100000	42.90	19266.67	32666.67	69.55
8	Utensils	4000	6000	50.00	3000	8000	166.7	8000	16000	100.00	4333.33	8933.33	106.15
9	Beddings	9000	11000	22.20	9000	19000	111.1	10500	21000	100.00	9300	16733.33	79.93

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