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Agricultural Diversification and Changing Cropping Pattern in Rural Himachal Pradesh: A Sociological Study

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Abstract

Agriculture remains the primary livelihood source for rural communities in Himachal Pradesh. However, factors such as small landholdings, population pressure on land, and limited non-farm employment opportunities have posed challenges to agricultural productivity and farmers' income. Agricultural diversification has emerged as an important strategy to address these challenges. The present study examines the status and nature of agricultural diversification in the study area based on empirical data collected from 353 respondents. The findings indicate a significant shift from traditional cereal crops to high-value horticultural and cash crops such as apple, tomato, peas, and garlic. The study also highlights that the majority of farmers possess small landholdings and have diversified their farming practices to improve income and livelihood security. The study concludes that diversification has played a crucial role in enhancing rural economic stability, though infrastructural and market-related challenges still exist.

Keywords: Agricultural diversification, horticulture, cash crops, rural livelihoods, Himachal Pradesh.

Introduction

Agriculture plays a vital role in sustaining rural livelihoods in India and continues to be the backbone of the rural economy. In Himachal Pradesh, agriculture supports nearly seventy percent of the population and serves as the primary source of employment in rural areas. Despite its importance, the agricultural sector in the state faces several challenges including fragmented landholdings, low productivity, and limited cultivable land.

The increasing subdivision of landholdings due to population pressure and inheritance laws has resulted in the dominance of small and marginal farmers. In Himachal Pradesh, more than 85 percent of the landholdings belong to small and marginal farmers owning less than two hectares of land. Moreover, only about 11 percent of the total geographical area of the state is available for cultivation, which further limits agricultural expansion.

To overcome these structural constraints, crop diversification has been promoted as an effective strategy to improve agricultural income and livelihood opportunities. Diversification towards high-value crops such as fruits and vegetables has been widely recommended for regions with favourable agro-climatic conditions (Vyas, 1996; Joshi et al., 2007). Himachal Pradesh has been recognized as a successful example of agricultural diversification in mountainous regions.

The diversification process towards horticulture began in the late 1960s in districts such as Shimla, Kullu, Solan, and Lahaul-Spiti and gradually expanded during the following decades. The development of horticulture has significantly improved the socio-economic conditions of farmers in the region (Chand, 1996; Sharma, 1996; Sharma, 2005). These developments have made Himachal Pradesh a model for other mountainous states in terms of agricultural diversification (Dreze & Sen, 2002).

Review of Literature

Singh (2001) conducted a study on crop diversification and its impact on farm income in Punjab. The study was based on primary data collected from farmers across different districts of Punjab. The objective of the study was to analyse the economic benefits of diversification from wheat–paddy cropping system to horticultural and vegetable crops. The results indicated that farmers who adopted diversification earned higher income and generated more employment opportunities compared to those following traditional cropping patterns. The study concluded that diversification could reduce the risks associated with mono cropping and enhance farm sustainability.

Thakur (2003) studied the impact of technological changes in agriculture on the institution of rural family and certain other social, economic, political and cultural aspects. Sample of 300 respondents was drawn out from four panchayat of two development blocks namely Mashobra and Chauhara of Shimla district. The study revealed that increasing production and earning more profit were found to be main purpose behind adoption of new methods of agricultures. Adoption of new agro- technology authority pattern, other aspects such as decision making, husband- wife relationship, and parent- child relationship are becoming more egalitarian. The status of women in the family has improved to a great extent. New agro-technology has also increased the income of farmers which interns improved their standard of living. As per as the social aspect are concerned jajmani still exists but changes in caste have become prominent as caste feeling have decreased, intercaste relations are co-operative and cordial, but contrary to this untouchability is still practiced at large.

Kumar (2011) conducted a study to highlight the issues for the twelfth five-year plan for agriculture in Himachal Pradesh. Agriculture is the main source of livelihood for majority of people in Himachal Pradesh. The farming in the state has witnessed huge transformation since independence. More so after 1971 when the state attained full statehood. The state has experienced substantial diversification in its agriculture towards high value cash crops such as fruits and vegetables. The state has made tremendous progress in agriculture production including horticulture. The food grain production in the state is expected to be 15.80 lakh tones in 2010-2011. From the view point of commercial and diversified agriculture, the production of vegetables touched the 13.91 lakh tones. The total fruit production in the state is expected to the tone of 8.92 lakh tones during the year (2010-2011) of which apple alone contributing 8.30 lakh tones. In this hilly region, the area under plough is always a cause of serious concern and it is impossible to bring more area under cultivation due to colossal costs involved. The trio of population increase, urbanization and industrialization has taken a heavy toll on net sown area in the state. The study concludes that there is a need to enhance the allocations for animal husbandry and dairying activities. There is a need to strengthen the marketing infrastructure in the form of controlled atmosphere chambers, cold chains etc. in the ensuring twelfth five-year plan. There a need to half the ongoing shifting of quality crop lands to non-agricultural. Uses in the state as it might jeopardize the food security, because the productivity levels of most of the crops are well below the National Yields.

Gummagolmath, Bhawar and Other's (2020) in their study impact of crop diversification on socio-ec

onomic conditions of the farmers: a case of Himachal Pradesh revealed that after the implementation of the project, (Himachal Pradesh Crop Diversification Promotion Project, being implemented by Government of Himachal Pradesh in collaboration with the Japan International Cooperation Agency-Official Development Assistance (JICA-ODA)during 2011-2021) area under vegetables, cultivation increased by 232 percent and 328 percent increase in rabi and khar if season, respectively. Whereas area under paddy, wheat, maize and barley declined by 16.28 percent, 23.05 percent, 22.70 percent and 76.89 percent, respectively. After the intervention of the project, the crop diversification index increased from 0.48 to 0.62 on the scale. Yield performance of vegetables crop has been impressive with 100 to 150 percent increase in both rabi and kharif seasons before and after implementation project. Out of the total respondents, 73.62 percent, 74.08 percent and 63.76 percent have attained self-sufficiency in production of vegetables, milk and food grain production. About 77.06 percent of the respondents opined that their annual income has increased due to diversification. Crop diversification has great potential in improving yield, reducing the cost of cultivation and finally increase the net income realized by farmers.

Objectives of the Study

The present study has the following objectives:

1. To examine the landholding pattern of farmers in the study area.
2. To study the nature of agricultural diversification adopted by farmers.
3. To understand the changing cropping pattern in the study area.

Material and Methods

Methodology is a way to systematically solve the research problem. In it, we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research techniques but also the methodology to be adopted by him in the solution of his research problem. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design a methodology for his research problem. In simple language, methodology means the method or procedure by which research is conducted depending upon the requirements of the research problem.

Area of Study

Himachal Pradesh extends over the area of 55673km. Himachal Pradesh borders with Jammu and Kashmir state in the north to northwest, Tibet in the east, Uttarakhand state in the Southeast, Haryana state in the south and Punjab in the south west to west. According to 2011 census, the total population of the state is 68.65 lakh persons (34.82 lakh males and 33.83 lakh females) with sex ratio of 972 females per 1000 males per sq. km. The density of population is 123 persons per sq. Km. As far as the literacy rate of the state is concerned, it is 82.80 percent (male 89.53% and female 75.93%). Presently, there are 12 districts, 73 sub divisions, 109 tehsils and 63 sub-tehsils in Himachal Pradesh (Administrative Atlus, 2020). The selection of Himachal Pradesh as an area of present study has been mainly guided by the fact that most of the population (89.96%) of the state lives in the rural areas with a 62% rural working population engaged in agricultural activities. Despite that per capita availability of cultivated area is very

low which only 0.95 hectare is. Farmers cannot extend the cultivated area so they have to change the mode of cultivation and type of cultivated crops to increase their production and income.

Himachal Pradesh consists of 12 districts namely Bilaspur, Chamba, Hamirpur, Kangra, Kinnaur, Kullu, Lahul-Spiti, Mandi, Shimla, Sirmour, Solan and Una. Keeping in view the geographical and topographical setting as well as the vastness and diversities of the state i.e. different zones, difficult terrain and climatic conditions, it would be difficult for the researcher to study the whole state with limited time and resources available at his disposal, hence, Kullu district has been selected for the present study purpose. Kullu district is one of the mountainous district of Himachal Pradesh which lies in the North-Western Himalayan range of India having an area of 5503 Sq. Kms. It lies between 77˚ 06 "4" East longitude and 31˚ 58 "00" North latitude. It is bounded by Lahul-Spiti and Kangra in North and North-East. Kinnaur is in East and Shimla is in South-East, and Mandi is in West. The topology of the district is rugged and tough. The prevalence of interlocking spurs, narrow and sleep sided valley with high peaks and dense forests of Kail and Deodar in the whole district adds to the youthfulness of its topography. The Satluj and Beas are the principal rivers of the Kullu District. The Parvati River and Kurpon Khud also flows through it. The economy of the district is basically agrarian. The agro-climatic conditions in the district vary considerably. Due to agro-climatic conditions, the district is most suitable for the growing of stones, citrus and temperate fruits.

The total population of the district as per the 2011 census is 4.38 lakh persons out of which 3.97 lakh (90.55%) reside in rural areas and 0.41 lakh (9.45%) reside in urban areas. The density of population of the district is 80 persons per Sq. Km. The sex ratio of the district is 942 females per thousand males. The literacy rate of Kullu district is 79.40% (Census Report 2011). Kullu district comprises of 6 tehsils namely Kullu, Bhunter, Banjar, Nirmand, Anni and Manali and 2 sub-tehsils namely Sainj and Nithar. There are 5 Developmental blocks in the district i.e. Nagar, Kullu, Banjar, Anni and Nirmand. The present study has been carried out in Anni block of this district. The total population of Anni block is 62174 persons, out of which 31509 (50.67%) are males and 30722 (49.40%) are females. The sex ratio is 957 females per thousand males. The scheduled caste population in this block is 19944 persons (32.07%).The population of general category is 40179 (64.62%) and the population of OBC and ST is 1637 (2.63%) and 414 (0.66%) respectively. In this block, there are 37 panchayats and only one Nagar panchayat, 811 villages and 16,217 households (Block Developmental Office- Anni 2020).

Universe and Sample of the Study

The study has been carried out in rural areas of the Kullu district in Himachal Pradesh. The people living in rural areas of this district are mainly engaged in agriculture and horticulture related activities. The sample for this study has been drawn through multistage sampling technique. At the first stage of sampling, district and block have been selected and at the second stage, the selection of the panchayats has been done, and in the third stage, the households and the respondents have been selected.

Selection of the District and Block

As we know that there are twelve districts in the state. Kullu district is also known for its apple, and it gives a significant contribution to make the state 'the fruit bowl of the country'. It is a clear example that people in this district have diversified their agriculture. The high value off-season vegetables have also been grown in this district. Kullu district is the unique example of agriculturally diversified region and hence the study has been carried out in this district. Further, Kullu district comprises of five

developmental blocks viz. Nagar, Kullu, Banjar, Anni and Nirmand. Out of these blocks, Anni developmental block has been selected for the study purpose because in this block a large majority of the farmers have diversified their traditional agriculture in favour of high value off season vegetables and the horticulture sector is also growing up rapidly in this block.

Selection of the Panchayats

Anni developmental block consists of number of panchayats containing number of villages. In the present study, it has been decided to select the panchayats for the present study. Keeping in view the time constraints and the resources available at the disposal of the researcher, it would not be possible to study the entire Anni Block. Hence, the selection of Panchayats to be included in the study sample has been done. As per office record, Anni development block has Thirty-Seven Panchayats and one Nagar Panchayat. Out of these 37 Panchayats, 20 percent Panchayats i.e. 7 Panchayats have been selected purposively for the study purpose mainly because these Panchayats are highly agriculturally diversified as compared to other Panchayats of this block. These panchayats are Bakhnao, Chowai, Jaban, Karad, Khani, Shilli and Namahong. In all these seven selected Panchayats agricultural diversification has taken place at a large scale as compared to other Panchayats of this block during the past two-three decades. These panchayats also contain reasonable number of villages and households. Keeping these features in view, these Panchayats have been selected purposively so that desirable number of households/respondents could be included in our sample of the study.

Selection of the Households/Respondents

After the selection of the Panchayats, the next step is the selection of the households/ respondents from the villages of the selected Panchayats. In the selected Panchayats, the numbers of villages vary. Bakhnao Panchayat has 34 villages, Chowai 12, Jaban 30, Karad 33, Khani 18, Shilli 20 and Namahong 35 villages. These villages are spread over distant locations. It is decided to select households at panchayat level irrespective of the number of villages in the selected Panchayats. The total number of households in seven selected Panchayats are 3531(Bakhnao 733, Chowai 471, Jaban 392, Karad 417, Khani 670, Shilli 402 and Namahong 446) having population of 13,818 persons. From each panchayat, 10 percent households have been selected randomly which came out to be 353 households (Bakhnao 73, Chowai 47, Jaban 39, Karad 42, Khani 67, Shilli 40 and Namahong 45). This has constituted our sample of the study. Thus, the actual sample size of the study is 353 households.

Unit of Investigation

As we know that almost every household in the village is engaged in agricultural activities. The unit of investigation in the present study is the head of the household either be a male or female as he/she is engaged in agriculture activities. He/she being the eldest member of the family is well acquainted with the area and has seen and observed agricultural diversification in the area during the last about two-three decades. Further, he/she is also responsible for taking decisions on behalf of the family members.

Further, in the present study the descriptive and exploratory research design has been used so as to analyse the agricultural diversification and its socio-economic impact on the lives of the people in rural areas of Himachal Pradesh.

Tools and Techniques of Data Collection

The Primary as well as secondary sources of data collection has been used in the present study. The main source for the collection of primary data was an interview schedule. The interview schedule has been formulated so as to know how far agricultural diversification has influenced the socio-economic life of the rural people in the hilly state of Himachal Pradesh. The schedule contains questions about demographic, socio- cultural and economic profile of the respondents. The Specific area to be covered in the interview schedule have questions pertaining to socio-economic life of the respondents before and after agricultural diversification, factors responsible for agricultural diversification and its impact on various aspects of socio- cultural, economic and political life of the rural people like family, marriage, kinship, caste, religion, education, occupation, income, power structure, etc. Both open and close ended questions have been included in the interview schedule. The interview schedule has been pre- tested and after its pre- testing, the necessary changes and modification, if any, has been made therein for its finalization and actual administration in the field. To collect the data, the respondents have been contacted personally by the researcher in order to conduct interview with them so as to keep uniformly in the collection of data. Beside this, observation technique has been used in the collection of data. The secondary sources of data collection consist of census report, statistical outline/abstract, economic survey, gazetteers, revenue records, information available in the block development office, panchayat records, books, articles, journals, magazines, internet etc.

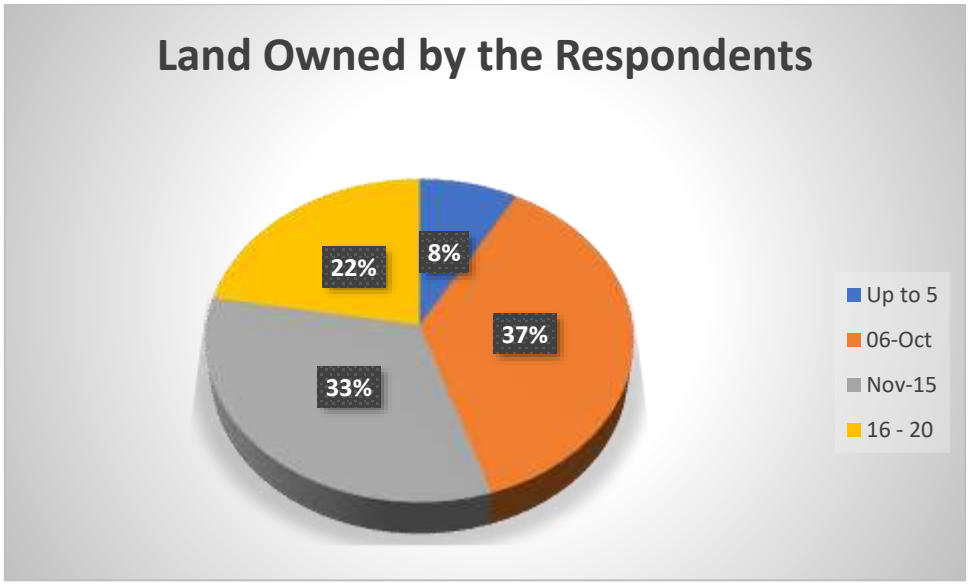
Analysis of Data

After the collection of data, the collected data were subjected to statistical operation starting from coding, scoring, tabulation and writing of the thesis. First of all, the code design was prepared and further the data was classified into meaningful and manageable categories. The categories then were assigned with the 'codes' systematically. All the relevant information from the interview schedule were coded carefully and transferred to the tabulation sheets and then the same was fed into the computer for further detailed analysis. Finally, data analysis was done with the help of SPSS software. The SPSS software system was used to prepare frequency distribution, tabulation and diagrammatic presentation of data. Some statistical tests such as simple ratio, percentage, arithmetic mean etc. have been applied wherever needed as per the nature and requirement of the data.

Results and Discussion

Land Ownership Pattern

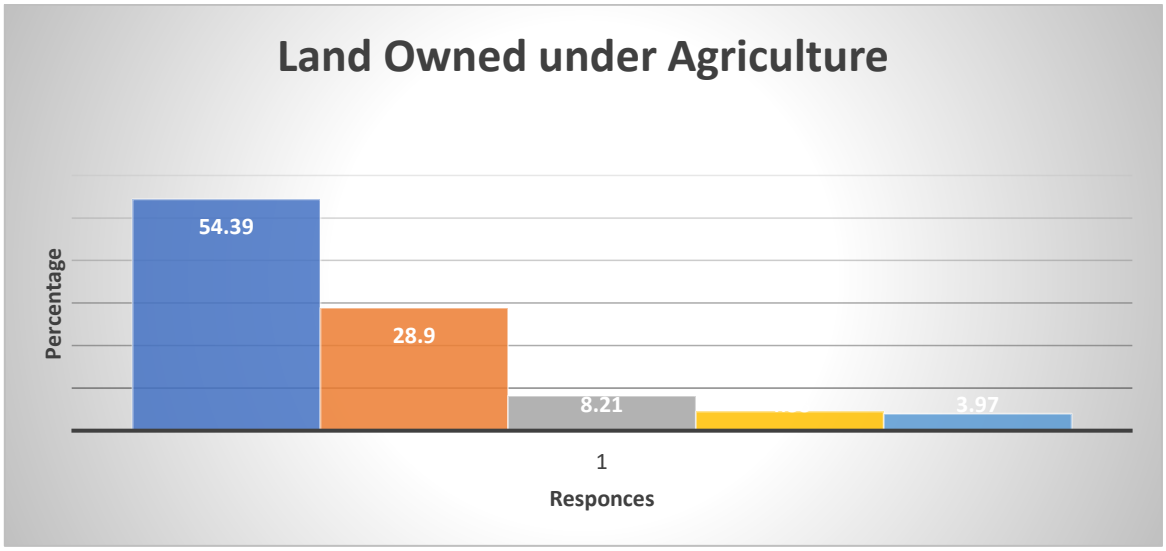
Land ownership is one of the most significant indicators of socio-economic status in rural society. Ownership of agricultural land provides livelihood security and social prestige. The distribution of land owned by the respondents is presented in Table 1.



Above pie chart shows that most of the respondents (35.69 percent) own land between 6 to 10 Bighas, 31.73 percent respondents own land between 11 to 115 Bighas, 21.53 percent respondents own land between 16 to 20 Bighas, 7.93 percent respondents own land upto 5 Bighas and only 3.12 percent respondents own land above 20 Bighas. The data suggests that majority of the respondents (67.42 percent) own moderate sized landholdings (6-15 Bighas) indicating that land remains a key of social and economic standing in the rural areas.

Agricultural Land

Agricultural land remains the primary resource for rural livelihoods. However, due to fragmentation and population pressure, the area available for cultivation is limited.

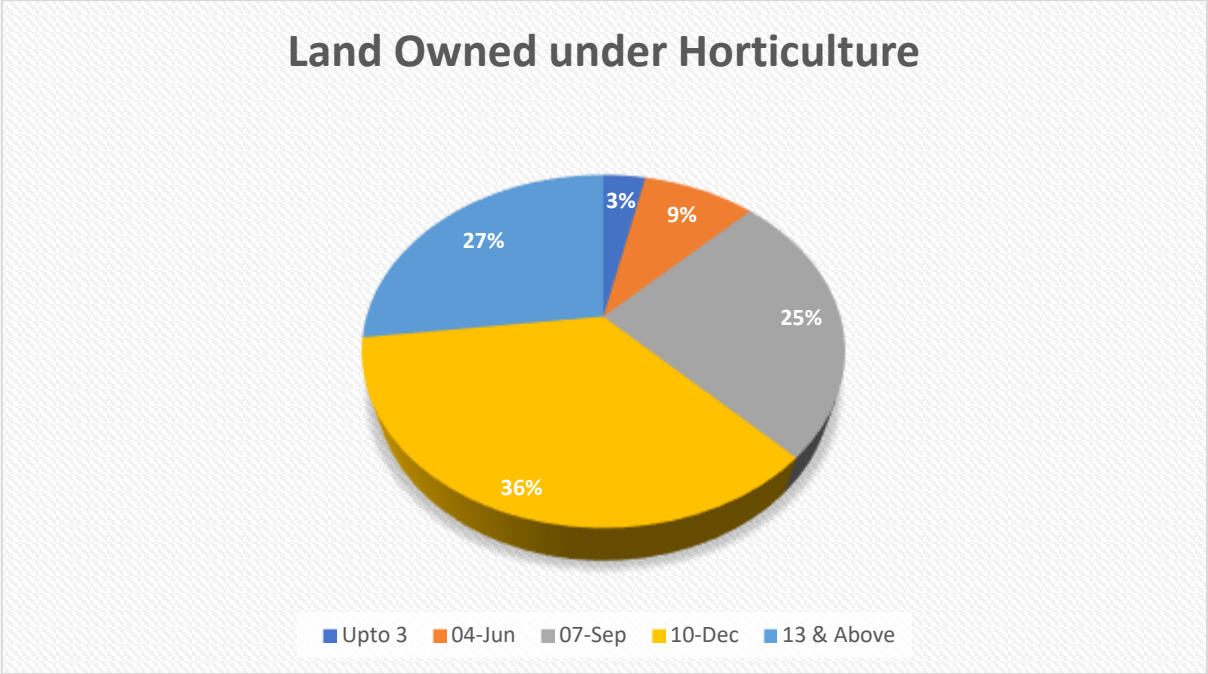


This bar diagram shows that majority of the respondents (54.39 percent) have agriculture land upto 2 Bighas, 28.90 percent respondents have land between 3 to 5 Bighas, 8.21 percent respondents have land between 6 to 8 Bighas, 4.53 percent respondents have land between 9 to 11 Bighas and only 3.97 percent

respondents have land above 12 Bighas for agricultural operations. Many respondents are no longer using their land for traditional agricultural produce, unlike in the past. Instead, there's a trend towards horticulture and cash crops, driven by their high demand and potential for good income, a practice adopted by the people in the study area, over the last two to three decades.

Land under Horticulture

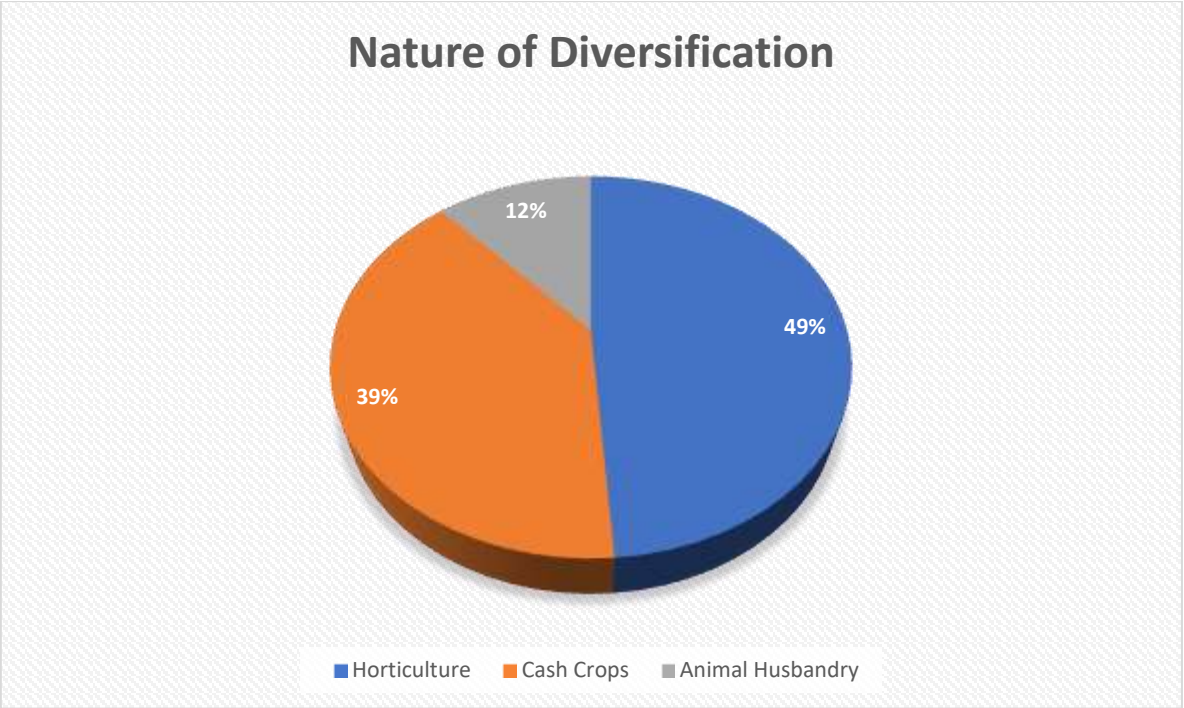
Horticulture has emerged as a major component of agricultural diversification in Himachal Pradesh. The favourable agro-climatic conditions of the region support the cultivation of temperate fruits.



Pie chart shows that the most of the respondents (35.41percent) have 10 to 12 Bighas of horticultural land whereas, 26.91 percent of the respondents have above 13 Bighas of land for horticultural crops. Further, 25.21 percent of the respondents have 7-9 Bighas, 9.07 percent of the respondents have 4-6 Bighas of land for the purpose of horticulture and there are only 3.40 percent of the respondents who have upto 3 Bighas land for horticultural cultivation. Thus, from this data it is revealed that the average size of 10.18 Bighas of land is used by the respondents for horticultural activities in the study area. It is also found that there are few respondents who owned Banjar land and the total land owned by the people in the study area is used for agriculture and horticulture operation.

Nature of Agricultural Diversification

Farmers in the study area have adopted different forms of diversification to enhance their income and reduce agricultural risks.



* Multiple choices are given by the respondents.

It is clear from the Table 3.11 that an overwhelming majority of the respondents (81.30 percent) have diverted towards horticultural activities whereas 65.72 percent respondents are now engaged in cash crops activities and 19.54 percent respondents are engaged in animal husbandry. The data shows that agriculture diversification has taken place in the study area. No doubt, the people in the area also grow traditional crops besides their horticulture and cash crops but only for their self-consumption in a small part of their agriculture land. Traditional crops are now grown mainly for self-consumption, indicating a shift towards market-oriented farming. This diversification likely enhances income resilience and adaptability to market fluctuations. The shift suggests farmers are proactively adapting to changing agricultural landscapes.

Changing Cropping Pattern

The cropping pattern in the study area has shifted from traditional cereal crops to high-value horticultural and cash crops.

Types of Crops Grown at Present

Sr. No.	Types of Crops Growing at Present	Frequency N*=137	Percentage
A)	**Traditional Crops**		
1.	Wheat	137	100.00
2.	Maize	109	79.56
3.	Paddy	31	26.62
4.	Barley	121	88.32
5.	Koda	46	33.57
B)	**Cash Crops**	**N*=232**	

1.	Tomato	232	100.00
2.	Potato	62	26.72
3.	Peas (Green)	184	79.31
4.	Garlic	163	70.25
5.	Onion	84	36.20
6.	Cabbage	49	21.12
7.	Cauliflower	69	29.74
C)	**Horticultural crops**	**N*=287**	
1.	Apple	287	100.00
2.	Pear	241	83.97
3.	Cherry	71	24.73
4.	Plum	126	43.90
5.	Apricot	134	46.68
6.	Peach	43	14.98

*Note: Multiple Choices are given by the Respondents.

The respondent's views on traditional crops shows that the cent-percent of the respondents grow Wheat, whereas 88.32 percent of the respondents grow Barley, 79.56 percent respondents grow Maize, 33.57 percent respondents grow Koda and 26.62 percent respondents grow Paddy. This shows that the people in the study area have diverted towards cash crops and horticultural crops. And only 137 (38.81 percent) respondents, out of the total 353 respondents are growing traditional crops at presently.

Further, the respondents were asked about the production of cash crops. Table 3.12 shows that the cent-percent of the respondents (232 respondents) grow Tomato, 79.31 percent respondents grow Peas (Green), 70.25 percent respondents grow garlic, 36.20 percent respondents grow Onion, 29.74 percent respondents grow Cauliflower, 26.72 percent respondents grow Potato and 21.12 percent respondents grow Cabbage in the present time.

When the respondents were asked about the horticultural crops, the data in the table 3.12 reveal that cent-percent of the respondents (287 respondents) grow Apple, 83.97 percent respondents grow Pear, 46.68 percent respondents grow Apricot, 43.90 percent respondents grow Plum, 24.73 percent respondents grow Cherry and only 14.98 percent of the respondents grow Peach in the present time.

Thus, the data reveals as also in table 3.11 that 81.30 percent of the respondents have started to grow horticultural crops, whereas 65.72 percent respondents have started to grow cash crops during the past two-three decades. And only 38.81 percent of the respondents are growing traditional crops in present time. This suggests that farming in the area has moved away from subsistence-oriented traditional crops to more lucrative horticultural and cash crops, driven by opportunities for higher income and better market linkages, aligning with changing consumer preferences and growing demand for fresh produce, and leveraging the region's agro- climatic suitability for these crops. It indicates a shift towards more commercial and profit-oriented farming practices, reflecting the adaptability of farmers to emerging trends and opportunities.

Conclusion

The study highlights the significant transformation in the agricultural structure of the study area over the

past two to three decades. Farmers have gradually shifted from traditional cereal crops to high-value horticultural and cash crops. Horticulture, particularly apple cultivation, has emerged as the most dominant agricultural activity. Agricultural diversification has improved income opportunities and strengthened the livelihood security of rural households. However, challenges such as small landholdings, limited infrastructure, and market fluctuations still need to be addressed to ensure sustainable agricultural development.

Recommendations

Strengthening Irrigation Facilities

- Expansion of small-scale irrigation systems (drip and sprinkler irrigation) should be promoted.
- Efficient water management is essential due to limited cultivable land and dependence on rainfall.

Development of Market Infrastructure

- Establishment of regulated markets, cold storage facilities, and transportation networks is needed.
- Farmers should be protected from price fluctuations through better market linkages and minimum support mechanisms.

Promotion of Value Addition and Agro-Processing

- Setting up fruit processing units (for apple, plum, apricot, etc.) can enhance farmers' income.
- Encouraging small-scale agro-industries in rural areas will generate employment opportunities.

Access to Credit and Financial Support

- Easy availability of institutional credit should be ensured for small and marginal farmers.
- Subsidies and financial assistance for horticulture and cash crops should be expanded.

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