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SOCIO-ECONOMIC IMPACTS OF APPLE PRODUCTION IN KULGAM DISTRICT OF JAMMU AND KASHMIR

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ABSTRACT

In the present study, the researcher estimates the association between the different socioeconomic variables and the apple production from 2007 to 2014 at the household level in Kulgam, one of the districts of Jammu and Kashmir. This region has witnessed high-level diversification from food crops, especially paddy to high-value cash crops like apple. The share of paddy production of the district in particular and in the State as a whole has revealed a decreasing trend. Paddy land is getting changed into the horticultural land, as the farmers find it to be more remunerative as compared to the cultivation of paddy. Recently, the farmers are showing not as much of interest in paddy cultivation as the paddy production has declined, because of the least profitability in the cultivation of paddy, when compared to the cultivation of non-food crops like apple. The returns from paddy cultivation are not increasing in proportion to the cost involved in the farming, and horticulture is a possible alternative for exploration in the State as paddy production shows a declining trend over the years, thereby decreasing the level of employment opportunities in the region. Farmers, particularly the poor who own very small holdings, are bound to shift from agriculture to rain-fed horticultural farming. The area has good climatic zones for growing temperate, sub-tropical and tropical fruits throughout the year. These fruits not only form the supplement diet of the local people but also form an important item of export to other parts of India.

KEYWORDS: Crop diversification; Apple; Paddy; Horticulture; Kulgam; Jammu and Kashmir

INTRODUCTION

The State of Jammu and Kashmir is one among the food deficit States of India. There is a big gap between food grain production and their consumption in the State, and due to which the State is importing about 7 lakh MTs of food grains every year. There are so many reasons behind this deficit. On the one hand the climatic conditions of the State, and the nature of the land holdings (fragmented) has minimized the paddy cultivation in the State, and on the second hand the promising returns from the horticultural sector has also heavily impacted for the cause. The conversion of paddy land for apple cultivation and other non-agricultural purpose has been on a high in the particular State. The horticultural sector is contributing immeasurably to build up the

financial status of the State through poverty alleviation, and employment generation. The different types of horticultural products of the State has made the region world-wide fame because of its excellence in quality and decency in taste. The fruit crops grown in the region of Kashmir are apple, apricots, cherries, pears, walnuts and almonds, and apple crop is occupying a large portion of the land. Farmers feel that sticking only to the water-intensive crops like paddy in times of water scarcity may prove non-beneficial and they willingly shift to the cultivation of cash crops like apple, almond, and walnuts (Government of Jammu and Kashmir, 2012).

The inclination towards such type of diversification could be due to the result of climatic changes, as the farmers find it increasingly difficult to

irrigate their rice fields. Recently, the farmers are showing not as much of interest in paddy cultivation as the paddy production has declined, because of the least profitability in the cultivation of paddy, when compared to the cultivation of non-food crops like apple (Asif and Anbuvel, 2016).

Taking the case of the State as a whole, the agricultural circumstances are somewhat or totally different from the rest of India. The J&K State is largely an agricultural dependent economy and nearly 80 percent of its population engaged in agriculture and its allied sectors. The peculiar geographical situation and inadequacy of infrastructure of the State have restricted the development and the possibility of land productivity. The State of J&K is characterized by the hilly topography and surrounded on all sides by the north-western folds of the Himalayas covered by snow, which makes the certain areas landlocked even up to seven months a year.

Diversification in agriculture is a possible and vital move to save the crumbling agricultural economy of the study area. Crop diversification acquires distinctive implication in this region, since the ecological and environmental problems and strain on natural resources (Wani *et al.*, 2012). The level of crop diversification is mainly determined by the geo-climatic, socio-economic conditions and technological development in any region. Likewise, rich farmers choose to specialize in the agricultural enterprise while the poor and subsistent farmers are more concerned in the diversification of crops (Blank, 1990).

The returns from paddy cultivation are not increasing in proportion to the cost involved in the farming. According to Asif and Anbuvel (2016), horticulture is a possible alternative for exploration in the State as paddy production shows a declining trend over the years, thereby decreasing the level of employment opportunities in the region. Farmers, particularly the poor who own very small holdings, are bound to shift from agriculture to rain-fed horticultural farming. The area has good climatic zones for growing temperate, sub-tropical and tropical fruits throughout the year. These fruits not only form the supplement diet of the local people but also form an important item of export to other parts of India.

THEORETICAL PERSPECTIVE

There are two ways by which the farmers go for crop diversification; one is to go for substitution and second way is to go for expansion. In the former one the farmers go directly for substituting the crop by new one, and in latter the farmers can go by increasing the land area by bringing unwanted lands or by clearing the forests under cultivation. But mostly the farmers have adopted substitution method rather than the expansion method in the study area. There are lots of theories (Theory of Production and Costs, Prof.

Schultz Theory of Transforming Traditional Agriculture) which discuss about the crop diversification in detail, but the present study has used the Theory of Profit Maximisation to understand the issue very well.

METHODOLOGY

The researcher has made an attempt to examine the ground realities in the study area to devise a methodology and research design of the present study by going through the existing literature meticulously in the area of research. The present study is exploratory in nature, mainly based on the primary data collected from thorough field survey with structured interview schedule and the units of analyses being the household heads.

Sampling Design:

Among the three divisions (Jammu, Kashmir, and Ladakh) of Jammu and Kashmir State, Kashmir division chosen for the present study which is dominated by the cultivation of apple. Kashmir division if further divided into South, North and Central parts, comprises of ten districts. Anantnag, Kulgam, Shopian, and Pulwama form the Southern part; while as Bandipora, Baramulla, and Kupwara forms the Northern part and Budgam, Ganderbal and Srinagar as the Central part of the region.

In all the ten districts of Kashmir region, both apple and rice are extensively cultivated. Out of which, the five districts which come under high productivity group in case of both apple and rice production are: Kulgam, Budgam, Anantnag, Pulwama, and Baramulla. Kulgam district, which was once known as the “*Rice Bowl of Kashmir*” has been chosen for observing the rapid trend in the shifting of paddy cultivation towards the apple cultivation over the last few decades.

Primary data were obtained from the survey samples by adopting stratified random sampling method to choose the respondents from the selected villages, with the help of an interview schedule by implementing three-stage sampling procedure as follows:

Stage I: Selection of all ten horticultural blocks of district Kulgam. (*Manzgam, Waripora, D.K. Marg, Kulgam, Arreh, Kadder, Qazigund, Devsar, Qaimoh, and Yaripora*)

Stage II: Selection of thirty-four highly apple populated orchardist villages from all ten blocks by the number of villages in the respective blocks.

Stage III: Selection of total of 272 sample respondents of the total thirty-four villages, eight sample respondents from each village.

Objectives:

The following objectives were set for the present research:

1. To find out the association between the different socioeconomic variables and the apple production from 2007 to 2014.

Hypotheses:

1. There is an association between the attribute (age) and the apple production from 2007 to 2014.
2. There is no association between the attribute (gender) and the apple production from 2007 to 2014.
3. There is an association between the attribute (educational qualification) and the apple production from 2007 to 2014.
4. There is no association between the attribute (occupation) and the apple production from 2007 to 2014.
5. There is an association between the attribute (family type) and the apple production from 2007 to 2014.
6. There is no association between the attribute (family size) and the apple production from 2007 to 2014.
7. There is an association between the attribute (land owned) and the apple production from 2007 to 2014.

RESULTS AND DISCUSSION

The table examines the association between the dependent variable i.e. the production pattern in case of apple cultivation from 2007 to 2014, (whether increased, or decreased, or did not change) and the various independent variables (characteristics of the household head) such as age, gender, educational qualification, occupation, family type, family size and land owned. Out of the total sample size, N=272 respondents, 178 respondents (65.4 per cent) depicted an increase, 48 respondents (17.6 per cent) depicted no change and the rest of 46 respondents (16.9 per cent) depicted decrease in the apple production over the period.

In the age group of 21 to 40, the highest share of 28 sample respondents (58.3 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 8 sample respondents (16.7 per cent of the row total) show a decrease in the apple production over the last seven years. Among the respondents of the age group of 41 to 60, the highest share of 108 sample respondents (62.8 per cent of the row total) show an increase in the apple production over the last seven years, a share of 32 sample respondents (18.6 per cent of the row total) show a decrease in the apple production over the last seven years and a share of 32 sample respondents (18.6 per cent of the row total) show no change in the apple production over the last seven years. And among the respondents having age above 60 years, the highest share of 42 sample respondents (80.0 per cent of the

row total) depicted no change in the apple production over the last seven years and the least share of 4 sample respondents (7.7 per cent of the row total) show no change in the apple production over the last seven years.

The Chi Square test is used for finding out the association between the attribute (age) and the production pattern in case of apple cultivation over the last seven years. The result reveals that the calculated chi-square value (8.08) at 4 degrees of freedom is significant at 0.01 levels. Hence the null hypothesis is rejected, and the alternative hypothesis is accepted. Therefore, it can be concluded that there is an association between the attribute (age) and the production pattern in case of apple cultivation over the last seven years.

In the case of gender, among the males, the highest share of 160 sample respondents (65.6 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 38 sample respondents (15.6 per cent of the row total) show a decrease in the apple production over the last seven years. And among the females the highest share of 18 sample respondents (64.3 per cent of the row total) also show an increase in the apple production over the last seven years and the least share of 2 sample respondents (7.7 per cent of the row total) show no change in the apple production over the last seven years.

The Chi Square test is used for finding out the association between the attribute (gender) and the production pattern in case of apple cultivation over the last seven years. The result reveals that the calculated chi-square value (4.46) at 4 degrees of freedom is > 0.05 . Hence the null hypothesis is accepted. Therefore, it can be concluded that there is no association between the attribute (gender) and the production pattern in case of apple cultivation over the last seven years.

In the case of educational qualification, considering illiterates, the highest share of 50 sample respondents (62.5 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 10 sample respondents (12.5 per cent of the row total) show no change in the apple production over the last seven years. And among the respondents who have studied up to middle, the highest share of 70 sample respondents (68.6 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 14 sample respondents (13.7 per cent of the row total) show a decrease in the apple production over the last seven years. Similarly among the respondents, who have studied HSC, the highest share of 20 sample respondents (55.6 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 6 sample respondents (16.7

per cent of the row total) show a decrease in the apple production over the last seven years. Likewise, among the respondents who have studied up to graduation, the highest share of 16 sample respondents (72.7 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 2 sample respondents (9.1 per cent of the row total) show a decrease in the apple production over the last seven years. And also among the sample respondents who have studied PG or above, the highest share of 22 sample respondents (68.8 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 4 sample respondents (12.5 per cent of the row total) show a decrease in the apple production over the last seven years.

The Chi Square test is used for finding out the association between the attribute (education) and the production pattern in case of apple cultivation over the last seven years. The result reveals that the calculated chi-square value (9.22) at 8 degrees of freedom is > 0.05 . Hence the null hypothesis is accepted. Therefore, it can be concluded that there is no association between the attribute (education) and the production pattern in case of apple cultivation over the last seven years.

In the case of occupational structure, among the respondents practicing agriculture, the highest share of 82 sample respondents (69.5 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 14 sample respondents (11.9 per cent of the row total) show no change in the apple production over the last seven years. Among the respondents having business as their main income generating source, the highest share of 56 sample respondents (61.0 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 14 sample respondents (17.1 per cent of the row total) show a decrease in the apple production over the last seven years. Likewise, among the respondents who are in government service, the highest share of 46 sample respondents (63.9 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 10 sample respondents (13.9 per cent of the row total) show a decrease in the apple production over the last seven years.

The Chi Square test is used for finding out the association between the attribute (occupation) and the production pattern in case of apple cultivation over the last seven years. The result reveals that the calculated chi-square value (5.12) at 4 degrees of freedom is > 0.05 . Hence the null hypothesis is accepted. Therefore, it can be concluded that there is no association between the attribute (occupation) and the production pattern in case of apple cultivation over the last seven years.

In the case of family type, among the nuclear type household families, the highest share of 116

sample respondents (59.8 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 38 sample respondents (19.6 per cent of the row total) show a decrease in the apple production over the last seven years. Similarly, among the joint family type households, the highest share of 62 sample respondents (79.5 per cent of the row total) also show an increase in the apple production over the last seven years and the least share of 8 sample respondents (10.3 per cent of the row total) show a decrease in the apple production over the last seven years.

The Chi Square test is used for finding out the association between the attribute (family type) and the production pattern in case of apple cultivation over the last seven years. The result reveals that the calculated chi-square value (9.54) at 2 degrees of freedom is significant at 0.01 levels. Hence the null hypothesis is rejected, and the alternative hypothesis is accepted. Therefore, it can be concluded that there is an association between the attribute (family type) and the production pattern in case of apple cultivation over the last seven years.

In the case of family size, in the group of households having family size below 5, the highest share of 96 sample respondents (61.5 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 28 sample respondents (17.9 per cent of the row total) show no change in the apple production over the last seven years. Among the households in the group of 6-10 the highest share of 50 sample respondents (65.8 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 8 sample respondents (10.5 per cent of the row total) show a decrease in the apple production over the last seven years. And, among the households having the family size of above 10, 32 sample respondents (80.0 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 2 sample respondents (5.0 per cent of the row total) show no change in the apple production over the last seven years.

The Chi Square test is used for finding out the association between the attribute (family size) and the production pattern in case of apple cultivation over the last seven years. The result reveals that the calculated chi-square value (9.97) at 2 degrees of freedom is significant at 0.01 levels. Hence the null hypothesis is rejected, and the alternative hypothesis is accepted. Therefore, it can be concluded that there is an association between the attribute (family size) and the production pattern in case of apple cultivation over the last seven years.

In case of land owned, considering the group of households having land size below 2 Kanals, 6

sample respondents (60.0 per cent of the row total) show an increase in the apple production over the last seven years, a share of 2 sample respondents (20.0 per cent of the row total) show a decrease in the apple production over the last seven years and a share of 2 sample respondents (20.0 per cent of the row total) show no change in the apple production over the last seven years. Among the respondents who are having the land size of 3 to 4 Kanals, the highest share of 26 sample respondents (52.0 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 10 sample respondents (20.0 per cent of the row total) show a decrease in the apple production over the last seven years. And among the respondents, who have land size of 5 to 8 Kanals, the highest share of 72 sample respondents (66.7 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 14 sample respondents (13.0 per cent of the row total) show no change in the apple production over the last seven years. Among the respondents who have land size of 9 to 16 Kanals, the highest share of 64 sample respondents (69.6 per cent of the row total) show an increase in the apple production over the last seven years and the least share of 10 sample respondents (10.9 per cent of the row total) show a decrease in the apple production over the last seven years. And among the sample respondents who have land size of above 16 Kanals, the highest share of 10 sample respondents (83.3 per cent of the row total) show a decrease in the apple production over the last seven years and the rest of the 2 sample respondents (16.7 per cent of the row total) show a decrease in the apple production over the last seven years and no any respondent who show a decrease in the apple production over the last seven years

The Chi Square test is used for finding out the association between the attribute (land owned) and the production pattern in case of apple cultivation over the last seven years. The result reveals that the calculated chi-square value (12.08) at 8 degrees of freedom is > 0.05 . Hence the null hypothesis is accepted. Therefore, it can be concluded that there is no association between the attribute (land owned) and the production pattern in case of apple cultivation over the last seven years.

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Table 1
Association between the Socio-Economic Variables and the Apple Production from 2007 to 2014.

Variables		Apple Production from 2007 to 2014			Total
		Increased	Decreased	Did not Change	
Age	21 to 40	28 (58.3)	8 (16.7)	12 (25.0)	48 (100.0)
	41 to 60	108 (62.8)	32 (18.6)	32 (18.6)	172 (100.0)
	Above 60	42 (80.8)	6 (11.5)	4 (7.7)	52 (100.0)
	Total	178 (65.4)	46 (16.9)	48 (17.6)	272 (100.0)
Chi-Square		df			P-Value
8.08		4			0.01 S
Gender	Male	160 (65.6)	38 (15.6)	46 (18.9)	244 (100.0)
	Female	18 (64.3)	8 (28.6)	2 (7.1)	28 (100.0)
	Total	178 (65.4)	46 (16.9)	48 (17.6)	272 (100.0)
Chi-Square		df			P-Value
4.46		2			0.10 NS
Educational Qualification	Illiterate	50 (62.5)	20 (25.0)	10 (12.5)	80 (100.0)
	Middle	70 (68.6)	14 (13.7)	18 (17.6)	102 (100.0)
	HSC	20 (55.6)	6 (16.7)	10 (27.8)	36 (100.0)
	Graduation	16 (72.7)	2 (9.1)	4 (18.2)	22 (100.0)
	PG/Other	22 (68.8)	4 (12.5)	6 (18.8)	32 (100.0)
	Total	178 (65.4)	46 (16.9)	48 (17.6)	272 (100.0)
Chi-Square		df			P-Value
9.22		8			0.32 NS
Occupational Structure	Agriculture	82 (69.5)	22 (18.6)	14 (11.9)	118 (100.0)
	Business	50 (61.0)	14 (17.1)	18 (22.0)	82 (100.0)
	Government Service	46 (63.9)	10 (13.9)	16 (22.2)	72 (100.0)
	Total	178 (65.4)	46 (16.9)	48 (17.6)	272 (100.0)
Chi-Square		df			P-Value
5.12		4			0.27 NS

Table 1 Contd...

Variables		Apple Production from 2007 to 2014			Total
		Increased	Decreased	Did not Change	
Type of Family	Nuclear	116 (59.8)	38 (19.6)	40 (20.6)	194 (100.0)
	Joint	62 (79.5)	8 (10.3)	8 (10.3)	78 (100.0)
	Total	178 (65.4)	46 (16.9)	48 (17.6)	272 (100.0)
Chi-Square		df			P-Value
9.54		2			0.001 S
Size of the Family	Below 5	96 (61.5)	32 (20.5)	28 (17.9)	156 (100.0)
	6-10	50 (65.8)	8 (10.5)	18 (23.7)	76 (100.0)
	Above 10	32 (80.0)	6 (15.0)	2 (5.0)	40 (100.0)
	Total	178 (65.4)	46 (16.9)	48 (17.6)	272 (100.0)
Chi-Square		df			P-Value
9.97		4			0.01 S
Size of Land Owned	Below 2	6 (60.0)	2 (20.0)	2 (20.0)	10 (100.0)
	3-4	26 (52.0)	10 (20.0)	14 (28.0)	50 (100.0)
	5-8	72 (66.7)	22 (20.4)	14 (13.0)	108 (100.0)
	9-16	64 (69.6)	10 (10.9)	18 (19.6)	92 (100.0)
	Above 16	10 (83.3)	2 (16.7)	0	12 (100.0)
	Total	178 (65.4)	46 (16.9)	48 (17.6)	272 (100.0)
Chi-Square		df			P-Value
12.08		8			0.14 NS

Source: Computed

Note: Figures in parentheses indicate percentage to the row total.