

Spatio-Temporal Change in Agricultural Productivity in Jammu District (2010 To 2015)

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Abstract: Agriculture is the backbone of Indian economy. The productivity is changing as per space and time. Population pressure is continuously increasing on land and for the fulfilment of their foods demand it is very necessary to increase the agricultural productivity, because we could not expand the land. The factors like physiography, soil and climate effect on agricultural productivity. Due to change in socio-economic factors agricultural productivity is also changing in year 2010-11, the overall highest productivity of the selected crops is found in Wheat and Rice in both the time periods 2010-11 and 2014-15, where as the Lowest agriculture productivity is found in Condiments & Species and Fruit & Vegetables in the same time period.

Keywords: Agriculture productivity, physiographic factors, Scio-economic factors and Change in crop area.

1. INTRODUCTION

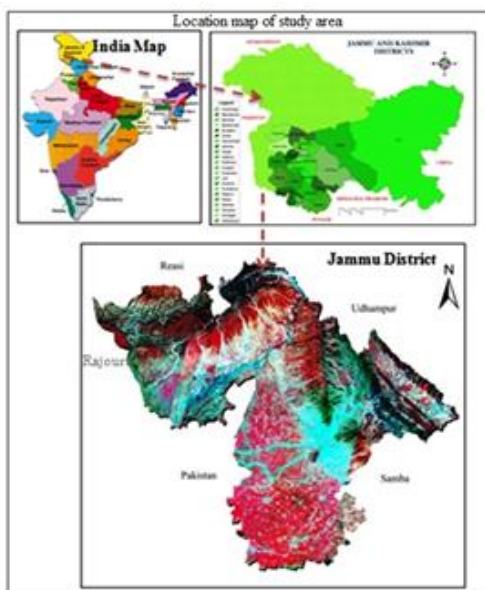
The spatial study of agriculture productivity is very useful for decision makers and administrators for regional planning. Agriculture is the main occupation of the people in the study region, as majority of population is directly or indirectly engaged in agricultural pursuits. The peoples in the study area faces a lot of problems related to the agriculture like non-availability of water, rugged topography and erratic pattern of rainfall. Cropping pattern of the district varies according to the available irrigation facilities and terrain.

The main crops growing in the area are maize, wheat, rice pulses, vegetables and oilseeds. Other than food grains, pulses and oilseeds are grown on small patches depending upon the terrain of the area. The district comprises dissected topography with steep slopes which allows only maize and wheat farming in maximum parts. The paddy cultivation is only done in areas where slopes are converted into terraces. The district has been selected as the study area because it is lying in upper altitudinal area where maximum area is covered by forests. Since, in this mountainous area, it very important to maintain the natural ecological conditions at the cost of population changes. The level of agricultural productivity as a concept, means the degree of to which the economic, culture, technical and organisational variables are able to exploit the biotic resources of the area for agricultural production. (Singh G.B, 1979) For a proper planning it is the need of hour to make an in-depth study in respect of land use and settlement pattern so that the process of development may not alter the natural environmental conditions. Crop combination regions constitute an important aspect of agricultural geography as it provides a good basis for agricultural regionalization (Hussain Majid).

2. STUDY AREA

Jammu is the largest city in the Jammu Division and the winter capital of Indian state of Jammu and Kashmir. It is situated on the banks of Tawi River. It is an administered by a municipal corporation .Location: Reasi-North, Udhampur- North East, Samba- South East, Rajouri- west and Pakistan-South and south west. Position: latitude: 32° 30' to 33° 7' North and Longitude: 74° 20' to 75°10' East. Area: Total geographical area 2336 Sq. Kms, North to South 67 kms and East to west 65 kms and density of population presently is 649.6 persons per square Km. Economy: The rural population is mainly depends on agriculture. Except for the Kandi area, the land is irrigated and fertile. The people of the district are relatively well off. Being the winter capital of J&K, the people of the area are politically conscious. Administrative: District has 8 C D blocks, 296 Gram Panchayats and 780

inhabited villages. District headquarters is situated at Jammu city. As per block data total population of district Jammu comes out to be 15.30 lacs and decadal growth rate of 30.1%. Jammu city is well connected to all parts within the State and outside through road, rail and air link. The city is approximately 600 km away from the National capital (Delhi) and about 290 km from summer capital (Srinagar) of the State.



3. RESEARCH OBJECTIVES

1. To study the level of agricultural productivity for different blocks in Jammu District for the year 2010 to 2015.
2. To study the change in agricultural productivity in different years.

4. METHODOLOGY

The study is based on both primary as well Secondary data. The technique is used by Jasbir Singh introduced (1976) in order to study block wise differences in the level of crop production and to delimit the weaker blocks from the point of view of agricultural production. The technique is found superior and is gives due weightage to the yield index and crop concentration index and their ranking for various crops. Transfer in agriculture productivity in Jammu district: With the help of following formula crop yield and concentration indices ranking coefficient for selected crops are calculated $Y_i = (Y_a / Y_r) \times 100$ -----I Where Y_i is the crop yield index and Y_a is the average yield per hectare of crop 'a' in the component enumeration unit. Y_r is the average yield of the crop 'a' in the entire region, and $C_i = (P_a / P_r) \times 100$ -----II where C_i is the crop concentration index. (P_a is the %age strongly of crop 'a' in the total harvested area in the component enumeration unit where as P_r is the %age strength of crop 'a' in the total harvested area in the entire region.

Crop yield and concentration indices	=	$\frac{\text{Crop yield index ranking of crop 'a'}}{2}$	+	$\frac{\text{Crop concentration index ranking of crop 'a'}}{2}$
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5. RESULTS AND DISCUSSIONS

The ranking coefficient techniques help to identify the cropping productivity of goods level of productivity in the Jammu District has been calculated. Food grains include mainly four types of cereal i.e. Rice, Wheat, Maize and Barley. Rice is the only prime staple cereal crop and it is cultivated in 85% of the total area. Rice is a second ranking cereal crop of kharif season. It thrives in warm and moist weather conditions. The cultivated was done in the month of May-June and harvested in October and November and cultivated in wider range of temperature Conditions ranging from 26-40°C in southern parts of Jammu district. The three crops are raised because of suitable temperature

conditions. There are different methods of its cultivation by broadcasting. Table 1 reveal that the rice production is highest in block R.S.Pura (53.9%) 13787 hectares and Bishnah (50.2%) 11213 hectares from the year 2011 and in table 3.2 shows that the rice production is (51.4) 12980 hectares in R.S.Pura block and (49.2%) 10050 hectares in Bishnah block in year 2014, the rice production in decreased (3.5%) 1970 hectares in both the blocks. Wheat is rabi crop grown in varied weather and soil conditions. It's cultivated in November-December and harvested in April-May in appropriate conditions the high responsive crops have been adopted by the progressive farmers of plains and traditionally cultivated in kandi because of topographic conditions. The agricultural inputs (modern technology, chemical fertilizers, weedicides, germicides and pesticide) have proven uneconomic for smaller farmers in plains. The farmers are switching over dairy farming resulting into changes in land use, trend, likely to continue in decades to come of the rabi season grown in varying climate conditions ranges from 15°C to 20°C growth period, (Dec. to march) of 25°C at the time of its harvest (April) rain of 50-75 cm coming mostly during winter season needed for its success. Wheat is grown in plains as well as in kandi areas. The wheat production is very high in Bhalwal (73.7%) 24121 hectares and Khour (56.6%) 9360 hectares. In 2014 the production of wheat is increased in Dansal (73%) 13624 hectares and Akhnoor (67.2%) 15428 hectares blocks.

Table1. Production of crops in Year-2010

Block	Rice	Wheat	Maize	Pulses	Condiments & Species	Fruit & Vegetables	Other Millets	Total
Akhnoor	4180	10980	1170	1990	0	103	3213	21636
Bhalwal	3900	24121	2358	680	604	160	908	32731
Bishnah	11213	10246	0	66	0	220	590	22335
Dansal	2995	6435	2490	540	0	92	825	13377
Khour	3620	9360	1127	1435	0	80	920	16542
Marh	8925	10915	1626	665	25	152	1080	23388
R.S.Pura	13787	10240	5	144	0	463	927	25566
Satwari	4580	3080	0	20	0	400	1542	9622
Total	53200	85377	8776	5540	629	1670	10005	165197

Source: Block census handbook

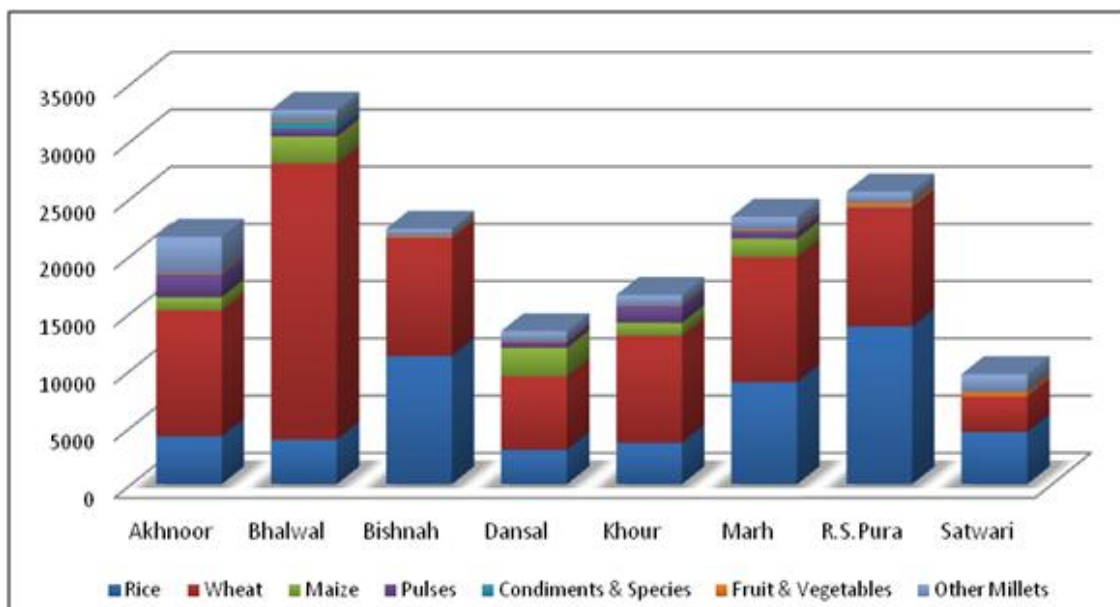


Figure1. Crop production of year 2010

Maize is the second important staple food crop next to rice. It is a cereal as well as fodder crop in the tehsil and have considerable regional variation kandi have its preponderance while in plains it has reported insignificant because paddy the parallel crop which has enhanced its percent areal coverage and percent villages in plains the paddy is more remunerative as compared to maize as parallel crops The paddy is negligible in kandi because it thrives on irrigation facilities. The average yield per acres nearly five quintals. Analysis revealed downward trend of the areal coverage in plains

significantly and in kandi is likely to continue in decades to come. The maize production is increased in Dansal and Bhalwal blocks as shown in table 2. Figure 2 shows that the wheat production is highest in Akhnoor, Bhalwal, Khour and Dansal blocks. While in R.S.Pura, Bishnah, Satwari and Marh blocks, where as maize production was highest in Dansal, Bhalwal and Marh blocks.

Table2. Production of crops in Year-2015

Block	Rice	Wheat	Maize	Pulses	Condiments & Species	Fruit & Vegetables	Other Millets	Total
Akhnoor	4110	15428	1756	163	0	390	1096	22943
Bhalwal	240	6430	3580	461	0	290	250	11251
Bishnah	10050	10075	0	123	0	193	0	20441
Dansal	200	13624	4150	310	0	280	100	18664
Khour	4650	11260	950	802	0	84	2080	19826
Marh	7550	8520	470	205	12	203	253	17213
R.S.Pura	12980	10610	0	234	0	413	1008	25245
Satwari	4100	3800	5	75	5	250	422	8657
Total	43880	79747	10911	2373	17	2103	5209	144240

Source: Block census handbook

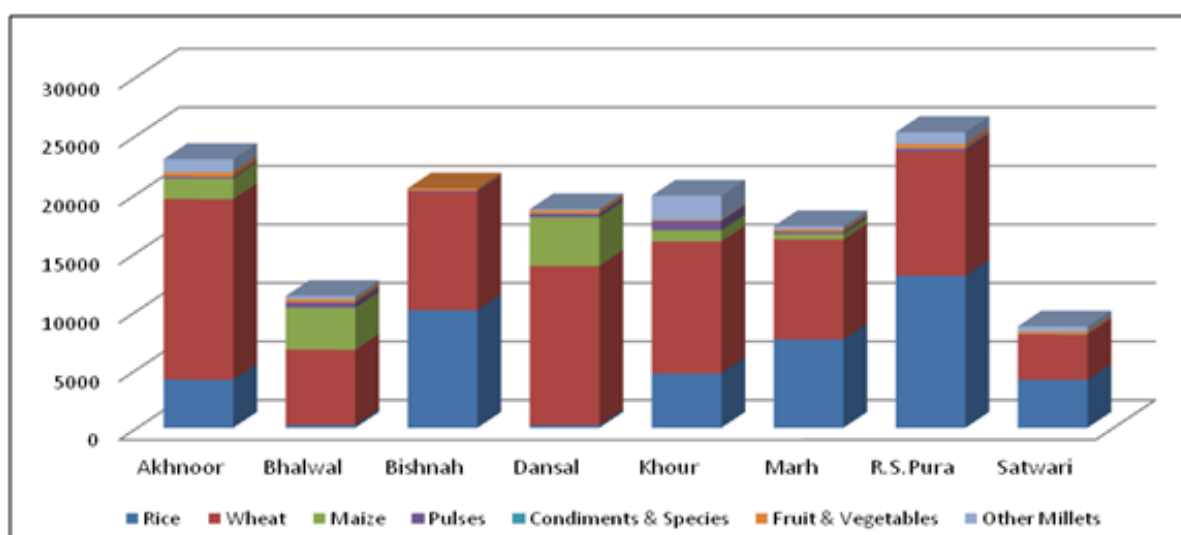


Figure2. Crop production of year 2015

Table3. Percentage from particular total crop out of total crops year-2010

Block	Rice	Wheat	Maize	Pulses	Condiments & Species	Fruit & Vegetables	Other Millets
Akhnoor	19.3	50.7	5.4	9.2	0.0	0.5	14.9
Bhalwal	11.9	73.7	7.2	2.1	1.8	0.5	2.8
Bishnah	50.2	45.9	0.0	0.3	0.0	1.0	2.6
Dansal	22.4	48.1	18.6	4.0	0.0	0.7	6.2
Khour	21.9	56.6	6.8	8.7	0.0	0.5	5.6
Marh	38.2	46.7	7.0	2.8	0.1	0.6	4.6
R.S.Pura	53.9	40.1	0.0	0.6	0.0	1.8	3.6
Satwari	47.6	32.0	0.0	0.2	0.0	4.2	16.0

Source: Computed by the author

Table4. Percentage from particular total crop out of total crops Year-2015

Block	Rice	Wheat	Maize	Pulses	Condiments & Species	Fruit & Vegetables	Other Millets
Akhnoor	17.9	67.2	7.7	0.7	0.0	1.7	4.8
Bhalwal	2.1	57.2	31.8	4.1	0.0	2.6	2.2
Bishnah	49.2	49.3	0.0	0.6	0.0	0.9	0.0

Dansal	1.1	73.0	22.2	1.7	0.0	1.5	0.5
Khour	23.5	56.8	4.8	4.0	0.0	0.4	10.5
Marh	43.9	49.5	2.7	1.2	0.1	1.2	1.5
R.S.Pura	51.4	42.0	0.0	0.9	0.0	1.6	4.0
Satwari	47.4	43.9	0.1	0.9	0.1	2.9	4.9

Source: Computed by the author

Pluses It includes black and white gram, white Gram, moong, beans, peas, red lentil, and local variety of black gram (kali) and has shown regression trend in plains and upward trend in kandi. Analysis revealed the percent share in a real coverage likely to enhanced in the decades in the decades to come because of high responsive seeds of pulses and remunerative returns from this crops and uneconomic returns from other crops .but some of the crops like masoor, black masoor (kulth in local language) and moth have declined in a real coverage and also percent share of villages and the uneconomic pulses crops likely to disappear from the parallel crops. This trend bound to bring changes in land use pattern in general but kandi in particular. The summer crop includes a variety of pulses and grown parallel with maize, bajra in kharif whereas in winter crops the pulses are also in parallel with wheat and oil seeds. The mixed crops pattern has also been indicated in rabi and kharif crops. The fruit production was highest in Satwari block. From figure 3.4 indicates that the Dansal, Akhnoor, Bhalwal, and khour blocks have highest percentage of wheat production, where as R.S.Pura, Bishanh, Marh and Satwari have highest rice production. Bhalwal and Dansal have maximum maize production and there was no maize production in Bishnah, R.S.pura and Satwari blocks.

6. CONCLUSION

The rice productivity was low in Dansal, Khour and Bhalwal blocks year 2010 and very low in Dansal, Bhalwal, Khour and Akhnoor blocks year 2015, where as R.S.pura, Bshnah and Marh has high productivity of rice. The high productivity was observed in Dansal, Akhnoor and Khour blocks in 2015, where as the wheat production was higher in Bhalwal, Akhnoor and Marh blocks in 2010. During the period of 2010 and 2015 the high productivity of maize was found in Dansal, Bhalwal and Marh blocks. Suggestions: It is very necessary to increase area under irrigation in study area for increase of level of productivity. The fertilizers should be used after testing of soil contents. Area sown more than once should be increased. Hence the above comprehensive study shows that rice is the only prime crop and it is cultivated throughout the whole district. The kandi areas are suffers from the irrigation facilities and the total agricultural system is depended on rainfall received from monsoon or western disturbances.

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