

A Study of Temporal Changes in Land Use and Cropping Pattern in Jammu district of J&K State

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Abstract

The pattern of land use of a country, state and district at any particular time is determined by physical, economic and institutional framework taken together. Jammu district of the state which is significantly important in respect of agriculture production has again great variations in the factors influencing agricultural productivity and thus has been selected for the study. Jammu district is selected for extensive study both in time and space to understand the changes in the land use patterns. The district is agriculturally most efficient district of the region as such required investigation into different aspects of agriculture and land use planning. In this present study attempt has been made to evolve some aspects of changes in land use as well as cropping pattern in agriculture of Jammu district based on temporal analysis for the period of 1989-90 to 2005-06. The need of the present study arose mainly to search for the various factors responsible for bringing change in the agriculture of the district. Over the years major changes have occurred in the pattern of land use, cropping pattern, allocation of gross irrigated area etc. The study has been based on secondary sources of information. The secondary data on land utilization, number of land holdings, cropping pattern and production has been collected from the different issues of digest of statistics of Jammu and Kashmir government and village imminent directories of different development blocks of the district. In the study all development blocks has been taken as unit. The information about land use, land holding, cropping pattern and production of two different phases of a study years has been obtained by extensive investigation and processing of concerned data over the period 1989-90 and 2005-06. The analysis has been presented in tabular form and the study is mainly descriptive in nature. The comparison has been made over the time to examine the trends in land use pattern of area, production and productivity of major crops grown in all 11 developmental blocks of Jammu district in percentage.

Keywords: Land use, land holding, cropping pattern, temporal changes, cropping intensity.

All type of production depends on land in general and all agriculture production depends on it and its pattern of uses. Besides being the resource of crop, fodder and forest production, it also provides space for building, cities, roads, schools, industries etc. The economic status of farmers primarily depends on the size of land holding and the way they uses it. The land use pattern in India is of an enormous diversity

owing to differences in latitude, altitude, variability of rainfall. The Jammu and Kashmir state is a heterogeneous state with vast variations in respect of climate, topography, soil structure, irrigation facilities etc. This state is significantly important; in respect of agricultural production has again great variations in the factors influencing the productivity of crops. More than 70 per cent of the population in

the state derives its livelihood from the agricultural sector.

Jammu district of the state which is significantly important in respect of agriculture production has again great variations in the factors influencing agricultural productivity and thus has been selected for the study. Jammu district is selected for extensive study both in time and space to understand the changes in the land use patterns. The district is agriculturally most efficient district of the region as such required investigation into different aspects of agriculture and land use planning. In this present study attempt has been made to evolve some aspects of changes in land use as well as cropping pattern in agriculture of Jammu district based on temporal analysis for the period of 1989-90 to 2005-06. The need of the present study arose mainly to search for the various factors responsible for bringing change in the agriculture of the district. Over the years major changes have occurred in the pattern of land use, cropping pattern, allocation of gross irrigated area etc.

Objectives of the study

1. To study the land utilization pattern and variation in land utilization pattern over the study period.
2. To work out the trend in area, production and productivity of major crops in Jammu district over the study period.
3. To suggest policy measures to enhance productivity levels of major crops of the district.

Research Methodology

The study has been based on secondary sources of information. The secondary data on land utilization, number of land holdings, cropping pattern and production has been collected from the different issues of digest of statistics of Jammu and Kashmir government and village imminent directories of different development blocks of the district. In the study all development blocks has been taken as

unit. The information about land use, land holding, cropping pattern and production of two different phases of a study years has been obtained by extensive investigation and processing of concerned data over the period 1989-90 and 2005-06. The analysis has been presented in tabular form and the study is mainly descriptive in nature. The comparison has been made over the time to examine the trends in land use pattern of area, production and productivity of major crops grown in all 11 developmental blocks of Jammu district in percentage.

Results and Discussion

Land Holding

The pattern of land use of a country, state and district at any particular time is determined by physical, economic and institutional framework taken together. A detailed study of operational land holdings of the farmers of district Jammu is made in order to gather information regarding distribution pattern.

Table 1 gives the size wise number of farm holdings and the changes in two periods of times i.e., agricultural year 1989-90 and 2005-06. The entire agricultural holdings are classified in five farm size groups i.e., less than 1 hectare, 1 - 2 hectare, 2 - 4 hectare, 4 - 10 hectare and above 10 hectare. A close perusal of table reveals that the Marh block having highest number of farm holdings i.e., 17,583 in year 1989-90 and 17,725 in year 2005-06 followed by the block Akhnoor having 10,251 number of farms in year 1989-90 and 10,508 number of farms in year 2005-06. In respect to highest number of farms the Bhalwal block comes on third position in both period of time i.e., 7,725 in year 1989-90 and 7,820 in year 2005-06. In this regard R. S. Pura block having 7,860 farms holdings in year 1989-90 and 7,940 in year 2005-06 placed second. The next block is Dansal having 5,197 farms in year 1989-90 and 5,262 in year 2005-06. The Satwari, Samba and Vijaypur blocks having less number of farm holdings in comparison to other blocks of the district.

Table 1: Size-wise number of holdings and changes over the period of 1989-90 and 2005-06

Block	Year	Less than 1 hec		1-2 hec		2-4 hec		4-10 hec		Above 10		Total	
		No. of holdings	%	No. of holdings	%	No. of holdings	%	No. of holdings	%	No. of holdings	%	No. of holdings	%
Akhnoor	1989-90	1103	10.75	7645	74.57	601	5.86	643	6.27	259	2.52	10251	100
	2005-06	1229	11.69	7703	73.30	614	5.84	630	5.99	332	3.15	10508	100
Bhalwal	1989-90	4122	53.35	2145	27.76	726	9.39	629	8.14	103	1.33	7725	100
	2005-06	4184	53.50	2189	27.99	735	9.39	627	8.01	86	1.08	7820	100
Bishnah	1989-90	1983	48.41	1395	34.05	481	11.74	69	1.68	168	4.10	4096	100
	2005-06	2081	49.18	1456	34.41	485	11.46	61	1.44	148	3.49	4231	100
Dansal	1989-90	1972	37.94	1253	24.11	1123	21.60	849	16.33	-	-	5197	100
	2005-06	2036	38.69	1281	24.34	1116	21.20	829	15.75	-	-	5262	100
Khour	1989-90	917	12.43	5077	68.82	635	8.60	420	9.69	328	4.44	7377	100
	2005-06	1005	13.41	5127	68.44	646	8.62	404	5.39	309	4.12	7491	100
Marh	1989-90	10065	57.24	4103	23.33	2396	13.62	921	5.23	98	0.55	17583	100
	2005-06	10183	57.44	4151	23.41	2408	13.58	904	5.10	79	0.44	17725	100
Purmandal	1989-90	1423	34.82	1172	28.68	964	23.59	527	12.89	-	-	4086	100
	2005-06	1475	35.66	1188	28.72	968	23.40	505	12.20	-	-	4136	100
R.S.Pura	1989-90	2995	38.10	2087	26.55	1570	19.97	387	4.92	821	10.44	7860	100
	2005-06	3108	38.84	2137	26.73	1582	19.78	372	4.65	798	9.98	794	100
Samba	1989-90	1823	50.09	1263	34.70	346	9.50	49	1.34	158	4.34	3639	100
	2005-06	1897	50.69	1317	35.06	352	9.40	38	1.09	138	3.68	3742	100
Satwari	1989-90	1019	31.65	1291	40.23	708	22.00	39	1.21	152	4.73	3209	100
	2005-06	1095	33.18	1423	43.12	712	21.57	32	0.96	38	1.15	3300	100
Vijaypur	1989-90	1985	54.02	1183	32.19	312	8.49	52	1.41	142	3.86	3674	100
	2005-06	2115	55.09	1239	32.27	319	8.30	48	1.25	118	3.07	3839	100

Table 2. Percentage temporal variations in the land use patterns in different blocks of Jammu district during 1989-90 and 2005-06

Block	Year	Net cultivated Area	Current Fallow	Forest Area	Area not available for cultivation	Total
Akhnoor	1989-90	59.05	1.17	18.03	21.57	100.00
	2005-06	59.14	1.02	17.51	22.32	100.00
Bhalwal	1989-90	48.19	0.99	10.82	40.00	100.00
	2005-06	48.00	1.64	9.36	41.00	100.00
Bishnah	1989-90	75.33	1.54	0.75	22.38	100.00
	2005-06	68.34	1.06	2.03	28.57	100.00
Dansal	1989-90	18.29	0.38	73.31	8.02	100.00
	2005-06	17.82	0.90	68.31	12.97	100.00
Khour	1989-90	70.22	1.07	2.23	26.48	100.00
	2005-06	68.58	4.14	2.36	24.92	100.00
Marh	1989-90	54.32	0.24	3.65	41.79	100.00
	2005-06	53.67	0.28	4.96	41.09	100.00
Purmandal	1989-90	22.01	1.24	60.19	16.57	100.00
	2005-06	22.05	0.67	60.12	17.16	100.00
R.S.Pura	1989-90	69.94	0.25	2.98	26.83	100.00
	2005-06	60.35	4.96	1.84	32.85	100.00
Samba	1989-90	37.97	2.03	23.56	37.45	100.00
	2005-06	34.98	0.99	17.48	46.55	100.00
Satwari	1989-90	68.11	0.59	1.79	29.51	100.00
	2005-06	65.97	0.94	1.64	31.45	100.00
Vijaypur	1989-90	50.57	1.03	7.12	41.28	100.00
	2005-06	49.42	0.75	5.98	43.85	100.00

A close perusal of table shows that the maximum farms comes in category second i.e., 1-2 hectare and category first i.e., less than 1 hectare. Further it is worth mentioning that more than 50 per cent farmers of Bhalwal, Marh, Samba and Vijaypur blocks having less than 2 hectare of land. In other way it can be stated that the majority of farmers of this blocks are under marginal and small category. On an overall 6

per cent to 21 per cent farms comes in category third (2-4 hectare) in different 11 blocks of the district. It is also observed that 1.09 per cent to 16.33 per cent farms come in fourth category (4-10 hectare). Similarly 1.08 per cent to 10.44 per cent farms come in fifth category (above 10 hectare) in different blocks of the district. In Dansal and Purmandal blocks having no any farms in this category. It is also observed from

Table 3: Percentage variation in area and production under different crops in different blocks of Jammu district

Block	Year	Paddy		Wheat		Maize		Bajra		Pulse	
		Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
Akhnoor	1989-90	1.00	0.66	3.60	2.53	10.23	6.94	18.17	19.23	3.79	3.17
	2005-06	0.93	0.67	1.19	2.58	3.76	2.65	19.24	20.81	3.91	2.76
Bhalwal	1989-90	0.49	0.29	3.57	2.52	16.45	11.16	24.66	26.24	4.79	4.01
	2005-06	0.40	0.29	1.12	2.24	6.01	6.15	21.74	23.53	4.10	2.90
Bishnah	1989-90	7.33	19.72	1.65	1.18	0.38	0.25	0.76	0.81	3.68	3.08
	2005-06	11.88	27.40	3.12	7.68	0.17	0.17	0.71	0.77	4.19	2.96
Dansal	1989-90	0.38	0.20	2.91	6.42	45.29	52.31	18.25	10.35	5.27	2.41
	2005-06	0.34	0.14	13.88	6.04	28.71	40.43	20.35	14.67	5.88	3.02
Khour	1989-90	26.09	15.90	13.16	8.91	7.35	5.11	9.18	9.11	14.39	12.05
	2005-06	24.62	16.01	5.26	10.02	34.64	3.10	12.85	12.95	13.30	8.54
Marh	1989-90	20.54	14.16	15.00	10.58	0.16	0.08	0.56	0.56	3.44	2.86
	2005-06	17.52	12.59	17.01	11.02	0.12	0.11	1.05	1.28	3.87	2.49
Purmandal	1989-90	0.93	0.55	3.28	2.03	11.97	8.13	18.07	17.94	5.82	4.87
	2005-06	0.60	0.37	1.04	1.98	13.74	13.19	5.71	5.76	3.95	2.54
R.S.Pura	1989-90	30.15	19.80	20.57	13.34	0.007	0.007	-	-	3.97	3.29
	2005-06	17.27	17.27	15.64	11.22	0.04	0.04	-	-	3.76	2.65
Samba	1989-90	2.27	5.58	10.28	17.39	6.45	12.25	4.14	8.03	21.25	25.89
	2005-06	11.45	3.37	10.32	14.00	7.23	21.29	7.11	1.95	18.93	19.45
Satwari	1989-90	7.34	21.37	5.81	0.97	0.14	0.28	2.04	2.87	2.11	1.60
	2005-06	6.19	20.43	4.32	0.30	1.77	5.45	3.07	3.10	3.14	2.02
Vijaypur	1989-90	2.60	1.79	20.13	34.08	1.27	3.40	4.15	4.20	31.48	36.89
	2005-06	1.97	1.41	26.73	32.85	3.77	7.37	8.16	15.12	34.90	50.62

the table that numbers of holdings are increases in respect to year 1989-90 to 2005-06. This is the symptom of fragmentation of holdings year by year. This finding on land holdings yields some valuable information on distribution pattern on the bases and class of operational holdings. These findings reveal that there is an acute problem faced by uneconomic sub marginal peasants. The rural poverty can be

attributed to unequal distribution of land resources among operational size class in Jammu district.

Classification of General Land Use Pattern

The land use pattern of a particular place influences the resource ecology, economy and life style of people residing in that particular area. The continuous socio

economic changes, advancement and improvement in the technology, Road connectivity, advancement in agriculture, building technology, Industrialization etc influence the land use pattern of particular area. Intensive use of land depends upon population concentration, human establishment, establishment of industries and advancement in agriculture. Pressure of fast growing population, its concentration at particular place, increase the demands necessitate judicious use of shrinking land resource. Better, the use of land resource better will be the socio-economic condition of people of that area. It is in this context the land use pattern adopted in different blocks of Jammu district is taken up for study so that proper planning for development of land resources and their optimal use is prepared. Present study therefore, takes into consideration only the relevant classes of land use.

Table 2 depicts details about percentage temporal variations in the land use patterns in different development blocks of Jammu district during 1989-90 and 2005-06. As far as the net cultivated area is concerned 4 blocks namely Bishnah, Khour, R. S. Pura and Satwari having the highest percentage of total area under cultivation in both the years viz. 1989-90 and 2005-06 ranging between 60.35 to 75.33 per cent of the total area. A higher decline in the percentage of cultivated area to total area was observed in case of R.S. Pura block i.e., 69.94 per cent in 1989-90 and it goes down upto 60.35 per cent in 2005-06. This situation comes due to urbanization of this block as this is near the capital city Jammu. The area under current fallow to the total area did not seem significant as ranging from 0.24 per cent in Marh block to 4.96 per cent in R. S. Pura block during both the study years as whole. It also proves that the intensity of cropping is very near to 200 per cent.

The table also reveals that in case of per cent area under forest to total area and observed that 2 block namely Dansal and Purmandal having more than 60 per cent area under forest in both the years of study. This is very good sign in context to environment and pollution parameters. The other blocks had very little area under forest. From the agricultural point of

view this is due to engagement of the maximum area under crop cultivation. The table further showed that the percentage area under not available for cultivation. This is due to hilly terrain, erosion of soil, national security purposes and government land etc. In this concern Bhalwal, Marh, Samba and R. S. Pura block having maximum area under the category of not available for cultivation and it is ranging from 40 per cent to 46 per cent of the total area. In the rest blocks of the district on an overall about 20 per cent area is not available for cultivation.

Variation in Area Under Major Crops and Productivity

The ratio of area under cultivation of different crops is not static in any region and it is influenced by geo-climatic, technological, economic, socio-economic and many more factors. Due to non static nature of cropping pattern the production of different crops over the areas also never remain static. In context of the above factors which are responsible for changing the cropping pattern and production, role of human being in influencing cannot be overlooked. In this context the table 3 depicts the percentage variation in the area under different major crops and their production over time and space.

A close perusal of table 3 clearly reveals that out of 11 development blocks of Jammu district percentage area under paddy in eight blocks viz. Akhnoor, Bhalwal, Dansal, Khour, Marh, Purmandal, R. S. Pura and Vijaypur is higher than the percentage of production in these blocks. Akhnoor block which is having 1 per cent of total cultivated area under paddy contributes only 0.69 per cent of total production of paddy, Bhalwal block yields only 0.29 per cent of total production against 0.49 per cent area under this crop. It is only in Bishnah, Samba and Satwari blocks where there is less percentage of area under paddy than the percentage of production. In this context, Bishnah block contributes 19.72 per cent of production from 7.33 per cent of area under paddy, whereas Satwari block having 7.34 per cent of area under paddy contributes to 21.37 per cent of total production. It is interesting to note that R. S. Pura

block which has optimum favourable conditions for paddy cultivation, inspite of having maximum area under the crop contributes only 19.80 per cent of total production, which can be attributed to preference of farmers to cultivate Basmati paddy having lower yield per unit of area but fetches high market value and has easy market also. The performance of farmers of this block is no doubt advantageous to the farmers but contributes towards low production of paddy per unit of area. Same observation hold true for Marh and Khour block where a good percentage of total cultivated area is under paddy cultivation but the percentage contribution in production is not enough.

In case of wheat crop again eight blocks namely Akhnoor, Bhalwal, Bishnah, Khour, Marh, Purmandal, R. S. Pura and Satwari are having higher percentage of area under it than the percentage contribution in terms of production. In spite of having good facility of irrigation in most of these blocks yield percentage is low. The possible reason for which can be the soil texture which mainly is clay and retain good amount of moisture for longer time which is not conducive good for wheat production. In Dansal, Samba and Vijaypur blocks the percentage of wheat production is higher to the percentage of area under this crop. Samba block has contributed 17.39 per cent of total production of wheat during 1989-90 as against a total of 14.00 per cent in year 2005-06. In Dansal block percentage of wheat production comes to 6.42 per cent as against 2.91 per cent of total area under wheat cultivation in year 1989-90.

The table further reveals that in case of maize production again eight blocks of Jammu district viz. Akhnoor, Bhalwal, Bishnah, Khour, Marh, Purmandal, R. S. Pura and Satwari, the percentage of this crop is lower than the percentage area engaged in maize cultivation, while in case of Dansal and Samba block the percentage production of maize is more than the percentage area covered under the maize in both the study years i.e., 1989-90 and 2005-06. As far as Bajra is concerned it appears significant crop in both the parameters of production wise and area wise. A close perusal of table reveals that Akhnoor,

Samba, Satwari and Vijaypur blocks, percentage of area covered in Bajra crop and percentage of production is higher than other blocks at both point of time of a study.

In case of pulses Samba and Vijaypur are the two blocks where percentage of production is higher than the percentage of area under their cultivation. In Samba block the percentage of pulse production during 1989-90 was observed 25.89 per cent as compared to 21.25 per cent of area under cultivation of pulses. Same phenomenon holds for the year 2005-06 with 19.45 per cent production to 18.93 per cent percentage area. Vijaypur block also followed the same trend with 36.89 per cent production from 31.40 per cent of area under cultivation during 1989-90 and 50.62 per cent of total production from 34.90 per cent of total area under pulses cultivation. Rest all the blocks showed less percentage of production as compared to percentage of net area under pulses crops. The maize production again in eight blocks of Jammu district viz. Akhnoor, Bhalwal, Bishnah, Khour, Marh, Purmandal, R. S. Pura and Satwari, the percentage of this crop is lower than the percentage area engaged in maize cultivation, while in case of Dansal and Samba block the percentage production of maize is more than the percentage area covered under the maize in both the study years i.e., 1989-90 and 2005-06.

Conclusions

The Marh block had highest number of farm holdings i.e., 17,583 in the year 1989-90 and 17,725 in year the 2005-06 followed by the block Akhnoor having 10,251 number of farms in year 1989-90 and 10,508 number of farms in year 2005-06. A close perusal of table shows that the maximum farms comes in category second i.e., 1-2 hectare and category first i.e., less than 1 hectare. Further it is worth mentioning that more than 50 per cent farmers of Bhalwal, Marh, Samba and Vijaypur blocks having less than 2 hectare of land. As far as the net cultivated area is concerned 4 blocks namely Bishnah, Khour, R. S. Pura and Satwari had the highest percentage of total area under cultivation in both the years

viz. 1989-90 and 2005-06 ranging between 60.35 to 75.33 per cent of the total area. A higher decline in the percentage of cultivated area to total area was observed in case of R.S. Pura block i.e., 69.94 per cent in 1989-90 and it goes down upto 60.35 per cent in 2005-06. reveals that out of 11 development blocks of Jammu district percentage area under paddy in eight blocks viz. Akhnoor, Bhalwal, Dansal, Khour, Marh, Purmandal, R. S. Pura and Vijaypur is higher than the percentage of production in these blocks. Akhnoor block which is having 1 per cent of total cultivated area under paddy contributes only 0.69 per cent of total production of paddy, Bhalwal block yields only 0.29 per cent of total production against 0.49 per cent area under this crop. It is only in Bishnah, Samba and Satwari blocks where there is less percentage of area under paddy than the percentage of production. In this context, Bishnah block contributes 19.72 per cent of production from 7.33 per cent of area under paddy, whereas Satwari block having 7.34 per cent of area under paddy contributes to 21.37 per cent of total production.

Policy Suggestions

1. To create awareness among rural community regarding different rural development programmes.
2. To explore potential and priorities of areas / villages through participatory rural appraisal.
3. To promote entrepreneurship development (in rural areas) in agriculture and allied sectors.
4. Formation of self help groups, farmers interest groups.
5. Strengthening linkage between extension functionaries of state line departments and people.

6. Promote ICT for rural youths.
7. Integrated efforts of line departments and other supporting agencies.
8. Capacity building of farmers.
9. Promotion of diversification.
10. Promoting the concept of value addition.
11. Strengthening women groups in respect of agriculture and territory sector.
12. Bring uncultivated land under cultivation.
13. Policy planners should formulate plan to check construction of buildings on agriculture land.
14. Adequate and timely supply of inputs.
15. Construction of water harvesting structures.
16. Strengthening of village cooperative societies.
17. At ease credit facilities.
18. Promoting / reviving rural industry.
19. Encourage local artisans which will help them in restoring their pride in their innovative potential.

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