

Spatial Distribution and Growth of Livestock Sector in Jammu & Kashmir: A Spatial Analysis

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Abstract : *The present study has been conducted to analyse the spatial distribution and growth of livestock in Jammu and Kashmir State. The share of each region in major livestock has shown a significant change during the period from 2007-2012, though variation in concentration of different livestock species across different regions is clearly visible. The livestock distribution has either exhibited an increasing trend, as in the Jammu Region or has remained static as in the Ladakh Region or has declined in the Kashmir Region. The spatial variations in the adoption of cross-bred animals have indicated the scope for improving animal productivity through increase in adoption of cross-bred-improved animals. The study also highlights a need to increase meat production especially of mutton in view of their rising demand.*

Keywords: *Livestock, Intensity, region, crossbred, productivity, spatial, concentration*

I. Introduction

Livestock makes a valuable contribution to socio-economic development of rural masses. Livestock sector has the scope for generating more employment opportunities, especially for the marginal and small farmers and landless labourers who own around 70 per cent of the country's livestock. Livestock wealth is more equitably distributed than that of land (Kumar and Singh, 2008). Being an important source of income and employment for this section of society, the livestock helps in alleviating poverty and smoothening of income distribution (BIRTHAL et al., 2009). Livestock is important both as savings and investments for the poor household and provides security or insurance through multiple ways in different production systems (KITAYI et al., 2005). In the mixed crop-livestock system, its importance goes beyond direct food production function. It supplies draught power and organic manures to the crop sector and hides, skin, bones, blood and fibres to the industries. Livestock makes substantial contributions to conservation of environment by utilizing huge amount of crop residues and by-products as feed/fodder and by supplying draught power and dung that save renewable environment polluting energy sources (chemical fertilizers, diesel, petrol etc.). In view of the rich interaction between crop and livestock, it is being increasingly realized that integrating livestock in a system approach would arrest the sustainability concerns, which are the keys to country's food security (Sere and Steinfeld, 1996; Hann et al., 1997; Patel, 1993; Singh et al. 2005).

Driven by sustained economic growth and rising incomes, there is a structural shift in the consumption pattern in favour of livestock products in both rural and urban areas (Kumar, 1996; Gandhi and Mani, 1995). In addition, the income elasticity of demand for livestock products is high estimated towards unity for certain wealth groups in the rural areas (Mehta et al., 2003; Kumar, 1998). Although the production of livestock and its products has been increasing over the years, serious doubts have been expressed regarding sustainability of these trends because these are by and large seen population-driven (BIRTHAL, 2000) as also the nature of contribution of livestock has been changing over time and varies from place to place.

The livestock capital plays a crucial role, as an integral part of the age-old crop-livestock mixed farming system in the mountainous regions where livelihood options in the non-farm sectors are limited for the resource poor hill peasantry. The dynamics of livestock have implications in this region owing to increased demand for the livestock products and issues like draught power availability and ecological pressure (Chand, 1995). In this backdrop, an attempt has been made in this paper to address the contemporary issues of growth and sustainability in this agricultural sub-sector from a wider dimension for integrating livestock with land use planning in the state of Jammu and Kashmir.

The rearing of livestock is a very critical and core activity in the economic profile of the state. Although it is adopted as a subsidiary occupation by majority of the rural population, yet it constitutes a vital activity from the stand point of the economic welfare of the farmers. Moreover, the nomadic, gujjars and backward population depend exclusively on sheep rearing for its livelihood. Livestock activity has a contribution of about 13% in the Gross Domestic Product of the state. It offers promising employment opportunities and handsome economic returns especially in rural mountainous areas of the state.

II. Study Area:

The state of Jammu and Kashmir constitutes northern most extremity of India and is situated between $32^{\circ} 17'$ to $36^{\circ} 58'$ north latitude and $73^{\circ} 26'$ to $80^{\circ} 30'$ east longitude (Fig. 1). The state is 640 km in length from north to south and 480 km from east to west. The total area of the State is $222,236 \text{ km}^2$ comprising 6.93 per cent of the total area of the Indian Territory including $78,114 \text{ km}^2$ under the occupation of Pakistan and $42,685 \text{ km}^2$ under China.

Location Map of Jammu and Kashmir

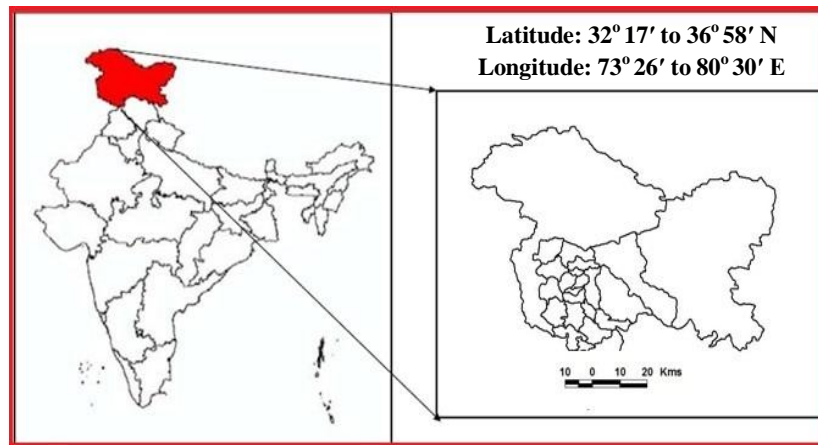


Fig. 1

III. Data Base and Methodology:

The study is based upon the secondary data gathered from diverse sources. Data pertaining to different aspects of livestock were collected from the Livestock Census India 2007 and 2012, Basic Animal Husbandry Statistics, Directorate of Economics and Statistics Jammu and Kashmir. Ministry of Agriculture, Government of India. The other information pursued in the paper was collected from various issues of Digest of Statistics, Directorate of Economics and Statistics, Planning and Development Department, J&K and Integrated Sample Survey, J&K and Sheri Kashmir University of Agricultural Sciences (SKUAST). The relevant data were statistically analyzed by using compound growth rate and line and bar graphs were used for data interpretation.

Objectives: The present study was undertaken with the following objectives.

- (i) To analyze the spatial distribution and growth of livestock in the study area.
- (ii) To observe the spatial variation of crossbred animals in the study area.

Spatial-distribution of livestock in Jammu and Kashmir

The distribution of major livestock species across the three geographical regions of J & K is documented in Table 1. The share of each region in major livestock has shown a significant change during the quinnial census of 2007-2012, though variation in concentration of various livestock species across various regions is clearly visible. A higher proportion of all the species of livestock (about 98% of buffaloes, 74% of goat, 59% of sheep and 53% of cattle population in the state was concentrated in the JMR. The share of JMR in the total livestock population, except goat had increased during 2007 to 2012. Within JMR, the districts of Udhampur, Doda and Rajouri accounted for a higher proportion of the total livestock population in the state owing to the enormous availability of pastures, Yet, surprisingly the share of KMR in the cattle and sheep population in the state had declined from about 49 per cent and 39 per cent to 42 per cent and 28 per cent, respectively. This scenario is in consonance with the decline in both male and female population of indigenous cattle and sheep population. The share of KMR in the total buffalo population in the state has also declined over the years. The least preference for buffalo milk and its products could explain the decline in buffalo population in the KMR. The distribution of various livestock species across districts of KMR revealed that Baramulla and Anantnag had a higher share of all the species as compared to other districts in this region. The LDR registered enhancement in the share of population of goats and other animals owing to suitability of climate and altitudinal location, The goats yield highly-priced fine wool called “pashmina”, which encourages more of their population in this region. The LDR constituted around 5 per cent of the total buffalo population in 2007 but by 2012 this species became almost invisible in this region due to poor performance of this species in its cold and arid climate. While the share of LDR in sheep population declined during 2007 to 2012, its share in total cattle population showed a marginal increase. Although the share of KMR in poultry has gone down during 2007 to 2012, a higher proportion of poultry was concentrated in this region, followed by JMR.

Table 1: Distribution of major livestock species across different regions of J&K

Region	Cattle		Buffalo		Sheep		Goat		Total Livestock	
	2007	2012	2007	2012	2007	2012	2007	2012	2007	2012
Kashmir Region	49.02	43.72	2.00	2.19	39.29	28.03	12.99	11.14	28.65	27.77
Anantnag	5.98	7.48	0.42	0.46	3.35	4.39	0.88	1.22	3.36	3.17
Badgam	5.48	5.07	0.15	0.06	3.64	5.23	2.12	1.64	4.29	3.41
Bandipora	3.38	3.15	0.15	0.10	3.83	4.08	1.60	1.26	2.64	2.86
Baramulla	6.38	6.40	0.55	0.47	5.16	5.31	2.78	2.69	5.24	4.71
Ganderbal	2.34	2.42	0.13	0.07	2.65	1.64	0.99	0.70	1.81	1.56
Kulgam	3.57	3.87	0.18	0.27	2.92	3.17	0.60	0.24	2.21	2.52
Kupwara	7.27	7.14	0.32	0.28	3.73	3.17	2.53	2.35	3.94	4.03
Pulwama	3.76	4.01	0.14	0.12	2.76	2.94	0.93	0.44	2.26	2.50
Shopian	1.81	2.64	0.12	0.32	2.02	2.58	0.14	0.10	1.28	1.83
Srinagar	2.05	1.54	0.00	0.04	1.13	1.52	0.33	0.50	1.62	1.18
Ladakh region	2.29	3.01	3.53	0.00	6.78	5.38	13.25	15.39	5.21	7.06
Kargil	1.29	1.43	1.53	0.00	3.91	4.39	4.27	4.30	2.64	3.11
Leh	1.00	1.67	2.00	0.00	1.47	2.39	8.98	11.09	2.57	3.95
Jammu region	55.69	53.27	94.31	97.81	63.33	59.19	73.76	73.47	66.14	65.17
Doda	9.45	6.60	3.44	3.03	8.43	7.28	5.54	3.94	8.05	6.03
Jammu	5.38	6.74	17.35	21.00	0.98	2.31	5.45	8.79	5.50	6.78
Kathua	6.68	8.41	7.44	9.69	6.49	9.03	9.70	10.54	7.65	9.34
Kishtwar	3.83	4.02	1.92	1.92	5.22	5.24	3.56	3.53	4.71	5.93
Poonch	5.96	3.28	18.95	15.28	9.27	3.52	7.44	4.97	8.07	4.80
Rajouri	4.64	4.21	14.89	18.45	13.54	12.67	17.73	15.16	10.59	11.19
Ramban	5.06	5.08	3.46	2.84	4.55	3.54	4.05	2.89	5.13	3.86
Reasi	4.66	4.22	9.68	9.43	7.28	6.60	8.45	10.02	6.30	6.94
Samba	3.46	2.77	7.09	4.95	1.00	1.27	4.04	4.08	3.75	2.71
Udhampur	6.57	7.94	10.68	11.22	5.94	7.73	7.80	9.55	6.39	7.59

Source: Livestock census of India, 2007 & 2012

Spatio-temporal composition of livestock in Jammu and Kashmir:

The spatio-temporal composition of livestock had changed noticeably during the period 2007 to 2012, as shown in Table 2. The sheep and cattle dominated the livestock production system and constituted over 65 per cent of livestock production in the state, despite significant variation from 2007 to 2012. While the share of buffaloes and other animals increased significantly, the share of cattle reduced from 35 per cent in 2007 to 31 per cent in 2012 of the livestock population during this period. The share of sheep in total livestock population in the state exhibited a marginal increase during 2007 to 2012. Goat and sheep dominated the livestock production system in the cold and arid region of Ladakh. This region has comparative advantage in raising 'Changra' goats known worldwide for production of fine 'pashmina' wool which fetches a handsome price in both national and international markets. Although the share of goats, cattle and other animals had increased, the share of sheep had declined towards 2007. The JMR is dominated by sheep, followed by cattle and goats. The dominance of cattle in the livestock production system of KMR could be explained by the fact that cattle (crossbred and buffaloes) on the crop by-products and residues, which are related to net sown area, irrigation and rising demand for cow milk. The temporal study of composition revealed that the population of cattle had declined in both KMR and JMR, but it was more pronounced in the JMR. However in the LDR, their share had gone up. There had been an increase in the proportion of buffaloes in all the districts of JMR. The harsh climatic conditions during major part of a year in the KMR and LDR had culminated into a decline in the share of buffalo in livestock mix. The proportion of sheep in the total livestock had gone up in the JMR and was quite perceptible in the Rajouri and Jammu districts. Sheep owners migrate from Jammu and Kashmir region along with their flock for grazing in lush green pastures during summers and return back to their own regions during winters, thus leaving no room for Kashmir sheep rearers to migrate to places with better pasture availability which demand formulation of appropriate grazing strategy for a rational use of between the regions, otherwise the existing system deprives one region of harnessing the benefits of CPRs and create regional imbalances with respect to this species. It is more warranted in view of the fact that there is great demand for mutton in the Kashmir region throughout the year, especially during important festival periods. Though the absolute number of goats has increased more in JMR relative to other regions, their proportion has shown a significant decline owing to the better growth performance of sheep. Although the other animals including horses, ponies, mules and donkeys had a lower share in livestock in all the regions. As far as poultry is concerned, it is highly dominated by fowl with its share ranging from about 87 per cent in the Kashmir region to over 99 percent in the Jammu region (Livestock Census, 2007; 2012). This scenario is in consonance with the increasing consumption of white meat in the state.

Table 2: Species-mix of livestock in different regions of J&K

Region	Cattle		Buffalo		Sheep		Goat		Total Livestock (000 No.)	
	2007	2012	2007	2012	2007	2012	2007	2012	2007	2012
Kashmir Region	47.52	46.24	0.65	0.60	44.01	45.19	7.82	7.97	3086	2607
Anantnag	52.99	53.44	1.17	1.02	41.26	39.08	4.58	6.46	398	380
Badgam	49.66	40.25	0.46	0.12	38.62	50.23	11.26	9.40	389	352
Bandipora	38.11	34.92	0.54	0.31	50.72	54.69	10.63	10.07	312	253
Baramulla	44.88	42.99	1.22	0.85	42.44	43.15	11.46	13.01	502	417
Ganderbal	38.45	49.09	0.68	0.38	51.28	40.27	9.60	10.26	214	138
Kulgam	48.32	48.65	0.78	0.90	46.14	48.23	4.76	2.22	261	222
Kupwara	52.96	55.94	0.75	0.59	35.05	30.16	11.24	13.30	466	357
Pulwama	49.54	50.62	0.59	0.40	42.67	44.98	7.20	4.00	267	221
Shopian	41.89	45.49	0.89	1.47	55.19	51.69	2.03	1.35	151	162
Srinagar	57.42	41.09	0.05	0.04	37.00	49.15	5.53	9.72	126	105
Ladakh region	13.13	13.99	6.29	0.00	35.86	38.56	44.72	47.45	612	625
Kargil	14.59	14.60	5.39	0.00	51.72	53.93	28.30	31.47	312	275
Leh	11.66	13.38	7.19	0.00	20.00	23.19	61.15	63.43	300	350
Jammu region	29.86	28.06	12.95	15.64	29.67	34.18	26.54	22.21	5681	7107
Doda	39.95	34.62	4.51	4.20	41.78	46.27	13.76	14.91	533	833
Jammu	35.73	31.46	35.44	25.87	7.64	13.08	21.19	29.59	600	531
Kathua	30.02	28.51	10.35	8.67	34.09	37.08	25.54	25.74	826	785
Kishtwar	30.77	30.00	3.32	3.67	49.10	47.34	16.81	18.99	375	439
Poonch	22.06	21.64	21.69	26.60	40.12	28.13	16.13	23.63	424	954
Rajouri	13.08	11.94	12.99	13.77	44.65	43.39	29.28	30.90	989	1252
Ramban	36.59	41.64	7.78	6.15	38.47	35.14	17.16	17.07	341	488
Reasi	22.04	19.26	14.19	11.35	40.32	36.46	23.45	32.93	614	745
Samba	37.67	32.39	23.85	15.26	12.77	17.98	25.71	34.37	239	325
Udhampur	30.72	29.23	15.44	10.90	32.46	34.50	21.36	25.35	760	755
J&K	35.09	31.15	8.41	10.50	33.85	34.45	20.28	20.76	9379	10339

Source: Livestock census of India, 2007 & 2012

Density of livestock in Jammu and Kashmir:

The livestock density was studied for the state and the results presented in Table 3, revealed that livestock density in the state increased from 89 animals/sq.km in 2007 to 98 animals/ sq.km of geographical area in 2012. The increase in proportion of some species and a decrease in the others seem to have influenced the livestock density in the state. The livestock density exhibited a considerable variation across different regions of J &K (Table 3). The livestock production system was found more intensified in the JMR (255 animals/ sq.km), followed by KMR in 2012. As far as the growth of livestock density was concerned, it had declined from 195 animals/sq.km (2007) to 156 animals/sq.km (2012) in the KMR, while it had increased significantly in the JMR and remained almost stagnant in LDR. Though the density of cattle in the KMR had declined from 94 /sq.km in 2007 to 81//sq.km in 2012, their density was still higher in this region than in JMR and LDR. The cattle density in the LDR was meagre, although it showed a marginal increase during 2007 to 2012. The density of buffalo was higher in the JMR and had increased from 2007 to 2012 with respect to the geographical area. The buffalo density in the KMR and the cold arid LDR was very low in 2007 and declined further by 2012. The density of sheep was higher in the KMR, followed by JMR. The JMR registered a considerable increase in sheep density, which had significantly declined in other regions. On the other hand, the density of other animals showed a small increase in all the regions of J&K. As regards poultry, its density with respect to geographical area was higher in the KMR, followed by JMR. The density of poultry has shown an increase in all the regions, although the increase was higher in JMR. The growth trends in population of different species showed a consistent pattern (Table 3). Cattle population increased in all the regions, except in KMR, which showed a decline owing to reduction in both indigenous male and female cattle. Within the Jammu region, the districts of Jammu and Poonch registered a negative growth in cattle population; it could be attributed to the expansion of cities and towns in these districts. The buffalo population increased in the JMR at a higher rate (5.0%), however in the KMR buffalo population declined significantly at an annual growth rate of 14 per cent. Except for the JMR, the two other regions expressed a negative growth in sheep population. Goats grew significantly in all the regions, although its growth rate (3.1%) was relatively higher in JMR.

Table3: Density and Compound Growth rate in livestock population in different regions of J&K: 2007-2012

Region	Cattle			Buffalo			Sheep			Goat			Livestock		
	2007	2012	G	2007	2012	G	2007	2012	G	2007	2012	G	2007	2012	G
Kashmir region	94	81	-0.2	2	1	-14.0	73	58	-1.8	12	19	0.6	195	156	-1.04
Anantnag	82	80	-0.7	2	1	-1.5	64	58	-2.5	7	10	2.7	156	149	-1.02
Badgam	156	114	-0.5	1	0.3	-7.1	121	143	-1.7	35	27	4.5	314	284	-0.94
Bandipora	45	34	-0.4	0.6	0.2	7.5	60	53	-1.3	13	10	5.6	119	97	-1.56
Baramulla	97	77	-0.8	3	2	-3.4	92	78	-1.6	25	23	3.3	216	180	-2.36
Ganderbal	59	48	-0.1	1	0.3	-3.2	78	40	-3.4	15	10	2.8	153	99	-0.31
Kulgam	107	92	-0.4	2	2	-0.5	102	91	-1.6	11	4	3.6	221	189	-0.32
Kupwara	99	77	-2.6	1	0.8	-0.6	60	42	-8.1	20	18	-3.0	180	138	-4.67
Pulwama	160	136	-3.3	2	1	-8.9	138	121	-2.7	23	11	-9.6	323	268	-2.35
Shopian	137	160	-2.7	3	5	1.2	181	182	-0.2	7	5	-7.5	328	352	2.28
Srinagar	163	97	-0.8	0.1	0.7	-5.4	105	116	-0.1	16	23	3.1	284	237	-0.25
Ladakh region	1	1	1.7		-	-	4	3	-2.5	4	5	4.1	9	11	0.6
Kargil	3	3	1.3	1	-	-	11	10	-5.7	6	6	-2.6	21	19	-2.25
Leh	0.8	1	0.7	0.5	-	-	2	2	2.3	4	5	5.4	7	8	5.45
Jammu region	56	65	0.4	25	38	5.0	58	86	3.7	52	58	1.2	185	255	2.42
Doda	87	157	3.6	18	11	8.7	164	116	5.0	54	37	3.5	392	251	-3.09
Jammu	184	89	-5.7	83	69	1.5	18	35	1.3	50	78	-2.2	235	265	4.43
Kathua	79	89	1.1	27	24	1.4	90	103	2.4	67	71	-5.7	263	277	3.09
Kishtwar	16	13	1.4	2	2	36.2	25	20	6.6	8	8	-4.3	51	43	-0.35
Poonch	60	112	-5.1	95	52	7.7	175	55	4.5	70	46	17.8	436	194	-3.56
Rajouri	60	43	3.9	60	50	5.4	206	158	3.2	135	113	5.9	461	365	-0.67
Ramban	191	152	2.7	41	23	6.5	201	129	2.5	90	62	4.3	522	366	-2.54
Reasi	70	50	4.1	45	30	4.2	128	96	4.4	75	86	2.5	318	362	4.13
Samba	155	99	2.3	98	46	3.3	53	55	4.1	106	105	3.6	412	504	4.05
Udhampur	87	8	2.4	44	31	2.1	92	99	5.3	61	73	4.5	285	386	5.06
J&K	30	30	0.1	7	10	3.2	25	34	1.3	16	22	1.5	89	98	1.17

Source: Livestock Census of India, 2007 & 2012

G denotes compound growth rates

Spatial distribution of Cross-bred Animals in Jammu and Kashmir:

The spatial distribution of cross-bred animals, are presented in Table 4. In the cattle, cross-breds comprised 62.94percent as against only 55.80 were cross-bred in 2007. During this period, the proportion of cross-bred sheep increased 64.70 to 69.67 percent respectively. Regional variation in the adoption of crossbred animals are glaring. In 2012, about 76.76 percent of the cattle were crossbred in Kashmir region. In the Kashmir valley Srinagar district had the highest population of cross-bred cattle in 2012 followed by Pulwama, Shopian, Budgam and Kulgam. In the case of sheep, in the Valley of Kashmir Pulwama District had the highest proportion of cross-bred sheep in 2012 followed by Shopian, Kulgam, Ganderbal and Budgam. A higher proportion of cross-bred cattle and sheep in the Kashmir valley was not only due to adoption of cross-bred animals but was more due to a significant decline in the population of both indigenous male and female cattle and sheep population. In Jammu region, the proportion of crossbred cattle did not increase significantly; it could partly be attributed to higher preference for the buffalo milk. In the case of sheep, maximum adoption of crossbreds was observed in the Kashmir region followed by Jammu region. Studies have shown that varying level of adoption of cross-bred technology, higher in some districts and lower in others indicate that livestock sector still had the potential which could be harnessed through a higher adoption of cross-bred animals in places where its adoption was comparatively lower for productivity gains. (Chandel and Malhotra, 2006).Cross-breeding of indigenous stock with exotic animals is a well known strategy for improving the productivity of indigenous stock, mainly of cattle, sheep and pigs (Kumar and Singh, 2008). Various centrally and state sponsored cattle development schemes were implemented for the improvement of indigenous breeds in the valley of Kashmir.

Table 4: Spatial distribution of cross-bred animals in different regions of J & K

Region	Percent to total Cattle population		Percent to total Sheep population	
	2007	2012	2007	2012
Kashmir region	69.28	76.76	70.74	84.56
Anantnag	62.96	77.95	75.80	88.93
Badgam	84.29	94.98	56.19	78.96
Bandipora	59.84	65.76	74.50	81.40
Baramulla	64.38	72.85	69.71	85.66
Ganderbal	65.59	66.88	77.12	88.86
Kulgam	87.27	92.59	49.24	90.31
Kupwara	36.04	41.85	53.28	61.86
Pulwama	96.99	97.77	97.99	97.84
Shopian	95.85	97.18	93.33	94.91
Srinagar	94.92	99.26	83.03	83.82
Ladakh region	35.46	45.50	55.62	63.44
Kargil	36.14	59.86	38.54	62.87
Leh	32.43	55.65	60.12	68.22
Jammu region	38.76	58.61	62.44	67.80
Doda	33.09	45.55	59.37	63.22
Jammu	50.00	58.96	82.14	94.60
Kathua	28.37	38.39	57.44	65.72
Kishtwar	25.33	35.31	42.44	57.22
Poonch	52.51	24.25	45.21	63.37
Rajouri	14.81	35.99	49.74	57.73
Ramban	4.81	25.99	49.45	60.07
Reasi	6.39	28.09	40.80	49.37
Samba	10.45	32.36	42.59	57.73
Udhampur	25.87	33.40	61.07	63.05
J&K	55.80	62.94	64.70	69.67

Source: Livestock Census of India, 2007 & 2012

Productivity of Livestock sector in Jammu and Kashmir:

Due to the robust launching of livestock hybridization programme in the state, output from this sector had witnessed an increase (Table 5). The contribution of livestock to state gross domestic product has shown an absolute increase over the years, but its percentage share had gone down from 13 per cent (1995) to 11 per cent (2005) (Integrated Sample Survey, 1995;2003). The temporal changes in livestock output (in terms of livestock products) presented in the Table 5, revealed that the total milk production in the state had gone up from 1167 thousand tonnes in 1997 to 1485 thousand tonnes in 2012. The species wise milk production had also undergone significant changes in consonance with adoption of cross-bred technology (Integrated Sample Survey, various issues). The increase in state milk production was accompanied with its increasing per capita availability. Another important product of livestock is meat whose production had increased in the state, though its per capita availability showed a declining trend which needs to be reversed immediately in view of its increasing demand in the state.. The state which should export livestock and livestock products is still importing the same worth hundreds of crores annually from different states, like Punjab and Rajasthan. The state is importing near about 14 lac sheep annually contributing about 280 lac kgs of mutton. The same costs about 7160 million rupees to state. The mutton requirement to state is about 1121.78 lac kgs but we are able to produce only 300.62 lac kgs and are deficient by 821.16 lac kgs.

Table 5: Growth of output from livestock sector 1997-2012

Year	Milk (000 tonnes)		Meat (000 tonnes)	
	Production	Per Capita Availability	Production	Per Capita Availability
1997	1167	347.23	NA	NA
1998	1232	357.49	25.26	7.42
1999	1286	364.14	25.81	7.31
2000	1321	365.21	26.29	7.27
2001	1360	367.32	26.64	7.20
2002	1389	366.70	27.05	7.14
2003	1414	365.07	27.00	6.97
2004	1422	359.21	27.00	6.82
2005	1400	346.19	27.00	6.68
2006	1485	359.61	26.61	6.44
2007	1495	378.31	26.51	6.30
2008	1530	382.22	25.55	6.25
2009	1565	385.45	25.80	6.00
2010	1572	392.12	26.88	5.99
2011	1585	395.50	25.95	5.50
2012	1595	398.78	25.50	5.80

Source: Digest of Statistics, 2011-12

Conclusion:

The study revealed that the distribution of livestock showed a diverse scenario across different regions. In the Kashmir region livestock population reduced during 2007 to 2012, and it increased significantly in the Jammu and Ladakh region. The livestock population, especially of cattle, buffalo sheep and goats has decreased in Jammu and Kashmir. The rapid decline in livestock population can be attributed to a combination of factors including the political instability in the region, shift towards sedentarisation of the nomads, draught years, forage and water become limiting to livestock, hence their production decline either through the effects of reduced reproduction, starvation- induced mortality or migration. The drastic change in vegetation cover due to severe lack of available moisture resulted in massive loss of livestock over the years in the state. The share of exotic cattle has increased in almost all the Districts during 2007 to 2012. As far as the population of indigenous cattle is concerned there is a sharp decline. The study reveals that there are various reasons which are responsible for the decline of cattle population. Due to the mechanization of agriculture in the study area the demand of cattle (Male Oxen) has reduced which were used to plough the land and to transport the grains to the market. With the advent of good transportation facilities the demand of cattle has reduced to a considerable extent.. The livestock composition has changed in favour of milch and meat animals and the percentage of cross-bred animals has been increasing, though wide regional diversities have been observed in the adoption of cross-bred cattle. Farmers in the study area are now relying on the scientific method of livestock rearing than the traditional one in which farmer has to rear three or four cattle in order to increase the milk production, now he has to rear only one crossbred cattle instead of four in order to have self sufficiency in milk production. The population of goat in the study area have showed that there is a decrease in the number of goat in every district of the region except Ladakh and hilly areas of Jammu and Kashmir where Gujjars and Bakerwals reside whose main source of income is livestock rearing especially goat and sheep.

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