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From Pastures to Present: Growth Analysis of Major Livestock Populations in Jammu & Kashmir (1980-2020)

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A B S T R A C T

This study examines the growth trends of livestock sector in UT of Jammu and Kashmir (J&K) from year 1980 to 2020. The study was conducted during the academic year 2021-22 at Skuast-k Shalimar. The research study is exclusively based on secondary data. It investigates the factors influencing the growth of total livestock over the decades in UT of Jammu and Kashmir and identifying areas of strength and weakness. The study employs log linear production function (Log Yt = A + Bt) for computing compound annual growth rate (CAGR) to assess the performance of the sector. The findings revealed distinct patterns of growth, fluctuation, and decline across the different time periods in livestock categories. Cattle populations demonstrated modest growth in phase I and II, followed by a period of fluctuation and eventual decline in the later phases. Buffalo populations consistently showed upward trends, with notable acceleration during some specific periods with minor fluctuations in its growth trend. Sheep populations exhibited strong growth in the earlier phases but gradually transitioned into periods of slower growth and eventual declined. Further, the study identifies challenges and problems associated with the sector like shortage of feed, less creditability, technological adoption etc and underscores the need for targeted interventions to improve and accelerate the livestock population and lastly some suggestive measures are stated in order to improve sector's resilience and contribution to rural livelihoods in UT of J&K.

Introduction

Agriculture — originating from the Latin words' "ager" and "cultura" which means land and cultivation respectively and traditionally represents cultivation of land and managing livestock. It is one of the oldest and important practices of humans and plays a vital role in food supply, income security and employment generation (Swaminathan, 2006). Agriculture is the backbone of economy especially in the agrarian societies where population largely depends on agriculture. Agriculture not only ensures food security but also supplies raw materials to various industries, making it a vital part of national development.

With the integration of scientific innovations like improved seeds, irrigation systems, and sustainable land management, modern agriculture is increasingly focused on enhancing productivity while conserving natural resources. Its role is closely linked with environmental sustainability, balanced use of input for current and future generation.

The role of agriculture is not confined to crop cultivation only rather being one of the oldest and most enduring sector, it holds unmatched potential in shaping livelihoods, sustaining economies, and supporting countless industries—from textiles to biotechnology for innovation along with employment generation, and environmental stewardship (Pingali, 2012). Agriculture when managed wisely and practiced sustainably, undoubtedly it becomes a powerful tool to combat hunger, reduce poverty, and build a resilient and equitable economy resulting in transforming economies into prosperity (World Bank, 2008). In fact its relevance is timeless, and priceless, even every possible advancement is essential for lifelong sustainability and well-being.

Agriculture which is largely viewed in light of crop integration encompasses much border domain which is beyond crop production and management. Its allied sectors like horticulture, sericulture, livestock and fisheries are equally important in every respect and together ensures relisence in the context of raising living standards of people economic development of a nation.

In Jammu and Kashmir UT, agriculture forms the cornerstone of the economy providing livelihood to a significant section of the population. The region's diverse agro-climatic conditions, ranging from temperate to sub-tropical zones, enable the cultivation of a wide variety of crops. Major crops include rice, maize, wheat etc along with pulses and oilseeds. The fertile alluvial soils of the Kashmir Valley, coupled with ample water resources from rivers and streams, support productive agricultural practices. In Jammu, the tropical climate and varied topography supports diverse crops like wheat, maize, barley etc supporting the largely population of rural economy (Baba and Wani, 2022).

The climate and natural resources of Jammu and Kashmir UT does not support crop cultivation only but it favours the practices of related sectors of agriculture as well. These allied sectors in Jammu and Kashmir UT, particularly livestock, play a crucial role in strengthening the rural economy and supplementing agricultural income (Mir and Bakht, 2021). With a significant portion of the population engaged in animal husbandry, livestock farming—including dairy, poultry, sheep, and goat rearing—serves as a vital livelihood source in both Jammu and Kashmir divisions.

The hilly terrains and pastures of Kashmir are well-suited for dairy and sheep rearing, contributing significantly to beef, leather, wool and mutton production, while Jammu sees robust activity in dairy farming. Government initiatives and schemes have further boosted this sector by encouraging scientific practices, breed improvement, and better marketing facilities (Hussain and Bhat, 2020). Thus, livestock stands as a strong pillar of agricultural sustainability and economic diversification in the region.

Materials and Methods

The present study is based on secondary data collected from Directorate of Economics and Statistics, Jammu and Kashmir. Different periods of study have been considered according to availability of decadal data of livestock sector. The time-series data ranging from 1980-81 to 2019-20 have been taken.

To achieve the objective of the study, statistical approach compound annual growth rate (GACR) was used for data analysis and interpretation. The compound annual growth rate was computed based on the time series data on the total livestock production of Jammu and Kashmir UT.

By using log-linear production function compound growth rates were estimated to study the percentage increase or decrease in the selected parameters. The following exponential growth function was used:

$$\mathbf{Log\ Y_t = A + Bt}$$

Where;

B= Log (1+ r) and r = antilog B-1

Percentage rate of compound growth per annum will be calculated as:

CAGR (%) = r = (Antilog B-1) × 100

Results and Discussion

The experimental findings of the study are presented below.

The overall results of compound annual growth rate of cattle (0.35 per cent), buffalo (7.00 per cent) and sheep

(1.95 per cent) population has reflected that there is a large spatial concentration of livestock population. First there was increase in population over time which may have been driven by the forces o that collectively contribute to its steady expansion and increased economic significance, especially among small and marginal farmers. One of the primary drivers is the rising and consistent demand for livestock products such as milk, meat, and wool, fuelled by growing populations, changing dietary preferences, and increasing urbanization. This heightened demand creates lucrative market opportunities, encouraging farmers to invest more in livestock farming as a means to augment their income. Additionally, the livestock sector serves as an important source of livelihood diversification and risk mitigation for farmers, enabling them to supplement their agricultural income and improve their economic stability. The economic status of farmers has also improved due to better access to credit facilities, government schemes, and technological advancements, which have collectively empowered farmers to enhance livestock productivity through improved breeds, nutrition, and management practices.

Furthermore, livestock farming plays a critical role in reducing income inequality by providing employment and economic benefits across different regions and socio-economic groups. Its low entry barriers and adaptability make it particularly suitable for small-scale farmers, women, and marginalized communities, thereby promoting inclusive growth as well. Institutional support, including veterinary services and extension programs, has further strengthened the sector by addressing challenges such as disease control and feed shortages. Taken together, these drivers form a strong foundation for the sustained growth of the livestock sector, reflecting its integral role in rural development and poverty alleviation.

Consistent increasing demand and economic status of farmers especially small and marginal farmers which gets boosted by livestock farming. Apart from these driving forces of growth, livestock has the power to reduce income inequality between people and between regions. Despite the promising growth in the livestock sector, several significant barriers continue to impede its full potential and slow down the pace of expansion at times during decadal phases. One of the foremost challenges is the shortage of quality feed and fodder, which directly affects livestock productivity and health. In many regions, inadequate availability of nutritious feed limits the growth and reproductive performance of animals, leading to lower yields. Improper management practices, often due to lack of awareness or access to modern technologies, further exacerbate production inefficiencies. Small and marginal farmers frequently face constraints in adopting improved breeding techniques and scientific animal husbandry methods, resulting in genetic deterioration and reduced resilience of livestock populations. Disease outbreaks and insufficient disease control measures remain a persistent threat, causing high morbidity and mortality rates, and increasing the cost of veterinary care. Additionally, limited access to veterinary services, credit, and markets creates further obstacles for farmers to invest confidently in livestock farming. Infrastructure deficits, such as poor transportation, storage, and processing facilities, restrict market linkages and reduce farmers' ability to fetch better prices. Moreover, environmental challenges like climate variability and water scarcity also impact feed production and animal health. These combined barriers not only constrain the sector's growth but also hinder its ability to contribute effectively to rural livelihoods and economic development. Shortage of feed and fodder, improper management, genetic deterioration and diseases control measures etc. these results are similar with the results of Mondal and Mishra (2019); Verma and Joshi (2019); Singh *et al.,* (2020); Mondal and Mishra (2021); Patel and Gupta (2022).

The Table 1 reflects the decadal trends in the cattle, buffalo and sheep population across the years which were computed by using compound annual growth rate. It is evident from the table that in phase I the cattle population has expressed mostly an increasing trend. However the rate of growth was slower. In phase II, the cattle population has depicted an increasing trend again with a steady speed of growth. In phase III it has shown a fluctuating trend throughout the years either the growth steadily increased or decreased over the years. In phase IV, it has mostly recorded a declining trend however, the rate of decline was slower but consistent as a result of which the computed growth rate comes out to be a negative quantity in this phase. The estimates of compound annual growth rate for phase I, II, III and IV resulted as 3.00, 0.85, 0.70 and -2.26 per cent respectively which indicated phase I to attain maximum growth and phase IV to attain minimum. The overall compound annual growth rate was estimated as 0.35 per cent.

In case of buffalo population, the growth rate in phase I has reflected an increasing trend throughout the entire

decade. In phase II the increasing pattern of growth was followed in this phase too but the speed of growth was slightly inflated than the previous phase. In phase III, in its mid-years, it has exhibited an minor fluctuations but in the second last and last year of the decade (2008-09 and 2009-10) it has reported an abrupt increase in population. In phase IV there was an impressive increase in buffalo population for few initial years then it started posing fluctuating trend. The estimates of compound annual growth rate for phase I, II, III and IV resulted as 2.54, 2.61, 14.35 and 3.60 per cent respectively which indicated phase III to attain maximum growth and phase I to attain minimum. The overall compound annual growth rate was estimated as 7.00 per cent.

The sheep population in phase I had entirely displayed an uprising trend with a magnificent speed of growth. In phase II the increase in sheep population continued throughout the decadal years with a steady speed of growth. In phase III the sheep population has been increasing slowly up to second last year of the decadal phase. In last two years of the decade there has been a minor decline in growth. In phase IV the sheep population has entirely depicted a decreasing trend from beginning to the last year of the phase. However, the rate of decline was slower but consistent. The estimates of compound annual growth rate for phase I, II, III and IV resulted as 7.95, 1.80, 1.92 and -3.73 per cent respectively which indicated phase I to attain maximum growth and phase IV to attain minimum. The overall compound annual growth rate was estimated as 1.95 per cent.

Suggestive Measures

Enhance feed and fodder availability: Promote improved cultivation techniques and efficient resource management to ensure a consistent supply of quality feed.

Strengthen extension services: Provide farmers with training on best management practices, modern breeding technologies, and effective disease prevention.

Improve access to veterinary care and credit: Facilitate better veterinary services and financial support especially for small and marginal farmers, women, and marginalized groups.

Develop market infrastructure: Upgrade transportation, storage, and processing facilities to improve market linkages and farmer incomes.

Promote technology adoption: Encourage use of innovative tools such as digital platforms for knowledge sharing and market access.

Implement climate-resilient strategies: Integrate sustainable practices to mitigate the impacts of environmental challenges like climate variability and water scarcity.

Foster collaborative efforts: Strengthen partnerships among government agencies, research institutions, and farmer organizations to drive sectoral growth.

Support inclusive growth: Design policies that prioritize marginalized communities and promote equitable benefits from livestock farming.

The livestock sector has demonstrated a steady growth trajectory, driven primarily by rising demand for livestock products, improved economic conditions of small and marginal farmers, and enhanced institutional support. This sector not only contributes significantly to farmers' livelihoods and income diversification but also plays a vital role in reducing income inequality across regions and social groups. However, despite these positive drivers, the growth of the livestock population is intermittently constrained by critical barriers such as feed and fodder shortages, inadequate management practices, genetic deterioration, and disease outbreaks. Additionally, limited access to veterinary services, credit, markets, and infrastructure deficiencies further impede the sector's potential to expand efficiently. Addressing these challenges through targeted interventions, policy support, and capacity building is essential to unlock the full potential of livestock farming.

To ensure sustained growth and development of the livestock sector, it is imperative to adopt a multi-pronged approach that addresses both the drivers and barriers identified. Prioritizing the improvement of feed and fodder availability through enhanced cultivation techniques and efficient resource management. Strengthening extension services to educate farmers on best management practices, modern breeding technologies, and disease prevention measures Enhanced access to veterinary care, credit facilities, and market infrastructure must be ensured, particularly for small and marginal farmers, women, and marginalized communities, to foster inclusive growth.

Table.1 Changes in the growth pattern of cattle, buffalo and sheep population of UT of Jammu and Kashmir

Phase	Year	Cattle (lacs)	Buffalo (lacs)	Sheep (lacs)
Phase I	1980-81	21.38	4.99	12.16
	1981-82	20.27	5.58	15.10
	1982-83	18.25	5.63	19.09
	1983-84	20.13	5.70	20.25
	1984-85	22.01	5.76	21.42
	1985-86	23.89	5.85	22.59
	1986-87	25.77	5.92	23.76
	1987-88	26.65	5.93	24.00
	1988-89	27.67	5.95	24.93
	1989-90	28.62	6.41	26.10
CAGR (%)		**3.00**	**2.54**	**7.95**
Phase II	1990-91	29.57	6.86	27.20
	1991-92	30.25	7.10	28.33
	1992-93	30.55	7.32	29.47
	1993-94	30.85	7.43	29.91
	1994-95	31.14	7.54	30.36
	1995-96	31.47	7.65	30.80
	1996-97	31.60	7.77	31.25
	1997-98	31.75	7.80	31.70
	1998-99	31.93	8.38	32.100
	1999-00	32.12	8.88	32.50
CAGR (%)		**0.85**	**2.61**	**1.80**
Phase III	2000-01	30.65	9.38	32.90
	2001-02	30.47	9.89	33.30
	2002-03	30.92	10.93	33.69
	2003-04	30.80	10.39	34.10
	2004-05	31.74	10.42	35.89
	2005-06	32.63	10.44	37.68
	2006-07	33.52	10.47	39.48
	2007-08	34.41	10.50	41.27
	2008-09	36.04	**23.18**	40.84
	2009-10	32.80	**35.85**	39.79
CAGR (%)		**0.70**	**14.35**	**1.92**
Phase IV	2010-11	31.21	48.53	38.32
	2011-12	29.60	61.21	35.37
	2012-13	28.00	73.89	33.89
	2013-14	28.55	74.60	32.93
	2014-15	26.84	73.84	31.97
	2015-16	27.40	73.00	31.01
	2016-17	26.26	72.49	30.05
	2017-18	26.84	71.18	29.08
	2018-19	25.00	70.91	28.12
	2019-20	24.55	69.08	26.20
CAGR (%)		**-2.26**	**3.60**	**-3.73**
OVER ALL CAGR (%)		**0.35**	**7.00**	**1.95**

Source: Directorate of Animal and Sheep Husbandry, Kashmir

Policy frameworks should also incentivize adoption of technology and innovation within the sector, including digital platforms for market linkages and knowledge dissemination.

Furthermore, climate-resilient strategies and sustainable practices should be integrated to combat environmental challenges impacting livestock production. By focusing on these strategic interventions, the livestock sector can unlock its full potential as a vital contributor to rural livelihoods, poverty reduction, and national economic development. By overcoming these obstacles, the livestock sector can continue to be a cornerstone of rural development, poverty alleviation, and sustainable economic growth.

Author Contributions

Aiman Rasool: Investigation, formal analysis, writing—original draft. S. A. Wani: Validation, methodology, writing—reviewing. F. A. Shaheen:—Formal analysis, writing—review and editing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

References

Baba, Z. A., & Wani, M. H. (2022). Structural transformation and performance of agriculture sector in Jammu and Kashmir. *Agricultural Situation in India*, 79(10), 31–39.

Directorate of Animal and Sheep Husbandry. (2020-22). Annual Livestock Census Report: Ministry of Agriculture & Farmers Welfare, Government of Jammu and Kashmir.

Hussain, A., & Bhat, S. A. (2020). Livestock sector in Jammu and Kashmir: An engine for sustainable rural development. *Indian Journal of Economics and Development*, 16(2), 355–360.

Mir, A. H., & Bakht, A. (2021). Impact of climate change on agriculture in Jammu and Kashmir: A review. *International Journal of Current Microbiology and Applied Sciences*, 10(2), 1201–1210.

Mondal, S. and Mishra, A. P. 2019. Dynamics and Performance of Livestock and Poultry Sector in India: A Spatio-Temporal Analysis. *National Geographical Journal of India* 65(4): 389-402.

Mondal, S., & Mishra, R. K. (2021). Trends and challenges in livestock population growth: An economic perspective. *Journal of Animal Science and Technology*, 63(4), 245–256.

Patel, R., & Gupta, S. (2022). Genetic deterioration and disease management challenges in buffalo and cattle populations. *International Journal of Veterinary Science*, 9(1), 77–89.

Pingali, P. (2012). Green Revolution: Impacts, limits, and the path ahead. *Proceedings of the National Academy of Sciences*, 109(31), 12302–12308. https://doi.org/10.1073/pnas.0912953109

Singh, A., Kumar, P., & Sharma, N. (2020). Impact of livestock farming on rural livelihoods and income inequality reduction. *Agricultural Economics Review*, 42(2), 130–145.

Swaminathan, M. S. (2006). Science and sustainable food security: Selected papers of M.S. Swaminathan. World Scientific.

Verma, D., & Joshi, M. (2019). Factors affecting livestock productivity: Feed, management, and disease control in smallholder farms. *Livestock Research for Rural Development*, 31(7), 110-112.

World Bank. (2008). World development report 2008: Agriculture for development. *The World Bank*.

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