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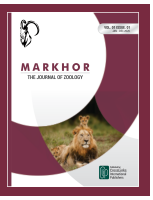

Original Article

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Livestock Production Systems and Their Implications for Beef Supply in District Shaheed Benazirabad, Sindh, Pakistan

Sajad Ali Laghari[1*], Abdul Samad Mangsi[2], Muhammad Rashid Shar[3], Sheikh Muhammad Usman[4], Fazul U Rahman Soomro[5] and Baby Yasmeen[6]

[1]Department of Theriogenology, Shaheed Benazir Bhutto University of Veterinary and Animal Sciences, Sakrand, Pakistan
[2]Department of Dairy Technology, Shaheed Benazir Bhutto University of Veterinary and Animal Sciences, Sakrand, Pakistan
[3]Department of Animal Reproduction, Sindh Agriculture University, Tando Jam, Pakistan
[4]Department of Anatomy, University of Agriculture Faisalabad, Faisalabad, Pakistan
[5]Department of Wildlife Management, Shaheed Benazir Bhutto University of Veterinary and Animal Sciences, Sakrand, Pakistan
[6]Department of Veterinary Pharmacology, Sindh Agriculture University, Tando Jam, Pakistan

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***Corresponding Author:**
Sajad Ali Laghari
Department of Theriogenology, Shaheed Benazir Bhutto University of Veterinary and Animal Sciences, Sakrand, Pakistan
vetsajjadlaghari@gmail.com

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ABSTRACT

Pakistan is considered to have a huge livestock sector that is important in terms of agricultural and food security, of which beef contributes greatly. To improve, it is necessary to understand trends in production locally. **Objectives:** To determine the farm attributes, animal husbandry, health management, and their marketing trends among livestock farmers in the district of Shaheed Benazirabad and the implications of this on beef production. **Methods:** A cross-sectional survey of 72 livestock farmers in four talukas (Sakrand, Nawabshah, Daur, and Qazi Ahmed) was conducted using a standardized questionnaire. The information on the type of farms, housing, feeding, herd size, health practices, record keeping, and marketing was collected and analyzed using descriptive statistics and LSD tests. **Results:** Agriculture was mainly dairy (84.54%), with no professional meat farm. The most prevalent types of housing were a semi pacca (65.79 percent) and medium herd sizes (11 50 animals, 68.56 percent). Feeding was mainly stalling feeding and grazing (76.25), and 72.50% of the farmers were using concentrates. Some of the most vital gaps were noticed: animal identification was not done in all the farms, and only 10.42% of the farms had records. The farmers were treated by veterinarians (82.99%), but 17.01% self-medicated. Intermediaries contributed to 49.29 percent of the total marketing. **Conclusions:** The production of beef in Shaheed Benazirabad is limited through the ancient traditional methods, poor record keeping, and market inefficiencies. Housing, nutrition, health management, identification systems, and coordinated marketing interventions are much needed to enhance the productivity and livelihoods of farmers.

INTRODUCTION

The world is rapidly growing in the demand for beef as a source of protein, though in most countries, beef is a significantly smaller proportion of meat intake [1, 2]. Beef is notably reputable in terms of its good taste and quality of eating, particularly in the developed nations, and is even becoming popular in the developing countries [3]. The concept of sustainable beef production is relative to the geographical area and economic aspects of the regions. Each year, the world yields over 70 million tons of beef, the major producers and traders of which are the United States, Brazil, China, and India [4, 5]. In addition to being nutritious, beef helps to sustain food security, offers employment opportunities in the rural communities, and is a significant part of international trade [1]. Nevertheless, beef production is different among regions due to the variation in cattle breeds, rearing programs, economic

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reasons, and taste [6, 7]. Pakistan has become an important producer of beef in South Asia [8]. Pakistan is one of the top ten beef-producing nations, and so, it is not only a country of local consumption but also the global meat market [1, 9]. The biggest subsector in agriculture in Pakistan is livestock, with the contribution to the agricultural value-added standing at approximately 63.60 percent and to the national GDP standing at approximately 14.97 percent (Economic survey 2024 to 2025) [10, 11]. The significance of this national situation to the Sindh province is due to the fertile land, mixed breeds of livestock, and well-established culture of cow rearing. The beef production systems in this region are based on red Sindhi, Thari, and crossbred cattle, which are consumed in rural and urban areas [12]. In spite of this potential, other challenges that curtail productivity include poor nutrition, limited veterinary care, traditional modes of husbandry, and inefficiencies in marketing [13, 14]. Shaheed Benazirabad district, a famous livestock district in central Sindh, is where cattle are reared on mixed crop-livestock systems. The cattle serve as sources of beef, milk, draft power, and financial stability to the farming families in the region. The beef production in the region incorporates the traditional farming methods and the emerging market trends. But the studies that have been done specifically to learn about the patterns of production, challenges, and opportunities in this industry are few [15]. The trends are important in the planning of interventions that will enhance productivity, increase the livelihood of the farmers, and contribute to the increasing demand for beef in Pakistan and globally.

This study aims to discuss beef production in Shaheed Benazirabad and offer information regarding the dynamics of local productive systems as well as relating them to national and global levels.

METHODS

A cross-sectional field survey was made because study aimed at studying the patterns of beef production, and this involved farm construction patterns, feeding patterns, animal health patterns, record-keeping patterns, and marketing patterns. The research took place in the District Shaheed Benazirabad, Sindh, Pakistan. The study duration was from August 2023 to October 2023. The purpose of the study was explained to the farmers, and the interview was not done without verbal consent. Knowledge was not disclosed, and information was used to establish research. The district was subdivided into four administrative talukas: Sakrand, Nawabshah, Daur, and Qazi Ahmed, which were selected precisely due to the large density of the livestock and the dependency on cattle rearing. The environment of the region is arid or semi-arid with hot summer time and moderate winters, and farmers usually adopt a mixed crop-livestock production system. The multistage method of sampling was employed: Four of the total talukas (Sakrand, Nawabshah, Daur, and Qazi Ahmed) were selected. Selection of respondents: The respondents were selected randomly (N=72 livestock farmers per taluka, Sakrand=20, Nawabshah=23, Daur=16, Qazi Ahmed=13). The sample was adjusted to ensure that there was a representative account of the livestock management activities in the whole district, and also that the sample would be limited by the logistical factors. The farmers were considered as units of observation, where only those who were actively involved in the production of livestock were included. Data was collected using a standardized and pre-tested questionnaire that was administered to farmers in a face-to-face interview. The questionnaire was meant to record the following: Farm type and housing system (dairy, beef, mutton, mixed; kacha, semi pacca, or pacca). Distribution of herd size (small: 1 10, medium: 11 50, large: more than 50). Feeding and watering procedures (stall feeding, grazing, stall + grazing, use of concentrate, water). Identification and record keeping (ear tagging, branding, and record keeping of animals). Treatment methods (veterinarian and self-medication). Marketing channels (stores /companies, middlemen, and self-consumption). The response to the parameters was tabulated as percentages and frequencies of the responses by the farmers. The information was collated and tabulated using Microsoft Excel and was analyzed using Statistical Package of Social Sciences (SPSS v.25). Production techniques of every taluka were summarized using descriptive statistics (percentages, means). Inferential statistics Least Significant Difference (LSD) test was used to compare means of talukas at the 5% significance level ($p=0.05$). The variability of means was determined using standard error (SE), which was not repeated in the tables to make the tables as clear as possible.

RESULTS

The study revealed that livestock production in Shaheed Benazirabad is predominantly dairy-oriented, with 84.54% of farms focusing on dairy. Beef-focused farms were not observed, while mutton-oriented and mixed farms represented 12.81% and 2.65%, respectively. Housing systems differed by taluka, with semi pacca housing being the most common (65.79%), followed by kacha (31.56%) and relatively few pacca dwellings (2.65%). In terms of herd size, the majority of farmers had medium herds (11 50 animals, 68.56%), with small (14.61%) and big herds (16.79%) being less common. These findings show that the district's farming system is mostly oriented toward dairy production, semi-pacca housing, and medium herd sizes. Significant differences were observed among talukas for farm type and herd size ($p<0.05$, LSD test) (Table 1).

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Table 1: Livestock Farming Style at the Various Areas of Shaheed Benazirabad

Characteristics		*Frequency (%)					
		Sakrand	Nawabshah	Daur	Qazi Ahmed	Overall Mean**	LSD (0.05) SE ±
Type of Farm	Dairy	65.00%	95.00%	87.50%	90.00%	84.54a	15.919 7.3062
	Beef	0.00%	0.00%	0.00%	0.00%	0.00	
	Mutton	35.00%	0.00%	6.25%	10.00%	12.81b	
	Mix	0.00%	4.35%	6.25%	0.00%	2.65b	
Housing Type	Kachha	60.00%	0.00%	6.25%	60.00%	31.56ab	41.223 18.223
	Semi Pacca	40.00%	95.00%	87.50%	40.00%	65.79a	
	Pacca	0.00%	4.35%	6.25%	0.00%	2.65b	
Herd Size	Small (1 10)	5.00%	13.04%	25.00%	15.38%	14.61b	11.381 5.0312
	Medium (11 50)	75.00%	73.91%	56.25%	69.23%	68.56a	
	Large (>50)	20.00%	13.04%	18.75%	15.38%	16.79b	

*The frequency/percent has been calculated from the total number of farms surveyed at each area, as 20, 23, 16, and 13 in Sakrand, Nawabshah, Duar, and Qazi Ahmed, respectively. **Means within column with different superscripts are significantly different ($p<0.05$).

The feeding techniques in Shaheed Benazirabad revealed that the majority of farmers used stall feeding and grazing (total mean 76.25%), particularly in Nawabshah and Daur (100% each). Only Qazi Ahmed (60% of the population) practiced exclusive stall feeding, whereas Sakrand claimed pure grazing (35%). Regarding concentrate utilization, a large majority of farmers supplied concentrate supplementation (72.50%), particularly in Nawabshah and Daur (100% each), while 27.50% fed without concentrates. Watering techniques were completely manual (100%) in all areas, with no usage of mechanized devices. The primary water supply was tapping water (98.55%), with no usage of local river water, and only a few farmers (1.45%) in Sakrand reported water shortage challenges (Table 2).

Table 2: Feeding and Watering Pattern/Style Practiced at Livestock Farms in the Vicinity of Shaheed Benazirabad

Characteristics		*Frequency (%)					
		Sakrand	Nawabshah	Daur	Qazi Ahmed	Overall Mean**	LSD (0.05) SE ±
Feeding Style	Stall	0.00%	0.00%	0.00%	60.00%	15.00b	41.942 18.540
	Grazing	35.00%	0.00%	0.00%	0.00%	8.57b	
	Stall Feeding with Grazing	65.00%	100.00%	100.00%	40.00%	76.25a	
	With Concentrate	60.00%	100.00%	100.00%	30.00%	72.50a	58.887 24.066
	Without Concentrate	40.00%	0.00%	0.00%	70.00%	27.50a	
Watering	Automatic	0.00%	0.00%	0.00%	0.00%	0.00	–
	Manual	100.00%	100.00%	100.00%	100.00%	100.00	
Type of Water	Tape Water	95.00%	100.00%	100.00%	100.00%	98.55a	3.2651 1.4434
	Local River	0.00%	0.00%	0.00%	0.000%	0.00b	
	Lack Water	05.00%	0.00%	0.00%	0.000%	1.45b	

Percentages calculated per taluka (Sakrand = 20, Nawabshah = 23, Daur = 16, Qazi Ahmed = 13). Different superscripts (a, b) indicate significant differences ($p<0.05$, LSD). **Means within column with different superscripts are significantly different ($p<0.05$).

According to the study, no farms used animal identifying procedures such as ear tagging, branding, or tattooing, and 100% of animals were kept without formal identification in all areas. Record-keeping methods were similarly inadequate, with only 10.42% of farmers keeping herd records, primarily in Nawabshah (30.43%). The vast majority of farmers (89.58%) did not preserve any productivity or health records, revealing a severe gap in herd management throughout the district (Table 3).

Table 3: Animal Identification and Record Keeping Trend/Practice at Livestock Farms in the Vicinities of Shaheed Benazirabad

Different Areas	Identification		Record	
	Without Identification	Ear Tag/ Branding/Tattoos	Keeping	Without Record
Sakrand	100.00%	0.00%	5.00%	95.00%
Nawabshah	100.00%	0.00%	30.43%	69.57%
Duar	100.00%	0.00%	6.25%	93.75%
Qazi Ahmed	100.00%	0.00%	0.00%	100.00%
Overall Mean	100.00%	0.00%	10.42%	89.58%
LSD (0.05) SE ±	–	–	23.549-9.6241	

Percentages calculated per taluka (Sakrand = 20, Nawabshah = 23, Daur = 16, Qazi Ahmed = 13). Different superscripts (a, b) indicate significant differences ($P<0.05$, LSD).

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Most of the farmers at Shaheed Benazirabad were treated by veterinarians (82.99%), 17.01% were practicing self-medication, with most in Qazi Ahmed (40%). Store or company products were also used for animal healthcare to a relatively high level (39.46%), most common in Qazi Ahmed (70%) and Nawabshah (47.83%). Regarding marketing, almost half of the farmers (49.29) sold their animals or products via middlemen, and 10% made direct self-consumption of the milk, mainly in Sakrand (40%). Not even 1.25 percent of farmers indicated that they made no sales of milk, and it indicated that there were milk sales in some patterns across the district. These results emphasize the dependence of farmers on doctors when animals are unhealthy and the middlemen in the marketing channel (Table 4).

Table 4: Farmers' Approaches for Treatment and Marketing at Livestock Farms of Shaheed Benazirabad

Different Areas	Treatment Approach		Marketing of Animals or Commodities			
	Self-Medication	Veterinarian	Shops/Company	Middlemen	Self-Consumption	No Sale of Milk
Sakrand	15.00%	85.00%	15.00%	40.00%	40.00%	5.00%
Nawabshah	13.04%	86.96%	47.83%	52.17%	0.00%	0.00%
Duar	0.00%	100.00%	25.00%	75.00%	0.00%	0.00%
Qazi Ahmed	40.00%	60.00%	70.00%	30.00%	0.00%	0.00%
Overall Mean	17.01%	82.99%	39.46%	49.29%	10.00%	1.25%
LSD (0.05) SE ±	28.912, 11.816		28.674, 13.160			

DISCUSSION

This study has found that animal farming in District Shaheed Benazirabad is primarily dairy, and there is no beef-specific farming seen in any of the places that were investigated. This is in line with past reports that have shown that the cattle sector in Pakistan was always approached as a dual-purpose system with milk production dominating the beef production [12, 16]. This is due to the absence of beef farms being one of the national trends where dairy breeds and crossbred cattle dominate the beef production, which is primarily a byproduct of the dairy industry [13, 17]. The efficiency of this production approach might be lower than specialized beef systems, as was the case in the United States and Brazil [3, 4]. The semi-pacca structures were the general practice of housing in the district, as they offer moderate protection against environmental stressors. Other Sindh places have also recorded similar results due to resource scarcity, which hinders modern housing systems [15, 18]. Medium herd size was the most common, which suggests subsistence farming, in which livestock acts as a source of both food and money. Although small and large herds were also seen, the size of the medium-sized herds shows the mixed crop-livestock system in the region. Feeding behavior showed a tendency towards stall feeding with pasture supplements, which can fit the conventional livestock production system in South Asia [7, 19]. It has been proven because the high adoption of concentrate supplementation, especially in Nawabshah and Daur, is an indication that farmers are increasingly becoming aware of how nutritional support can aid them in enhancing their output. Nonetheless, the amount of non-mechanical watering systems and the total dependence on the manual availability of water sources illuminate the drawbacks of the technology that could add to the barriers to efficiency and animal well-being. One of the major limitations observed was the lack of animal identification and record-keeping processes. None of the farmers used ear tags or branding, and fewer than 11% had herd records. This finding is notable because proper identification and management of data are essential to guarantee genetic enhancement, disease management, and traceability in livestock systems [5, 20]. In the absence of such methods, the district can barely carry out systematic breeding programs and health monitoring. The level of reliance of the farmers on veterinarians was high (82.99%), which signifies the belief in the professional services. Nevertheless, a considerable level of self-medication was observed, especially in Qazi Ahmed, which can make it difficult to avoid antibiotic resistance and the inability to treat the illness. The same challenges are reported in other regions of Pakistan, where informal methods are common among the farmers because they lack access to veterinary services [14]. Trends in marketing have indicated that cow and milk value chains are dominated by middlemen, with more than half of farmers depending on them to sell the products. This dependence reduces the profitability and bargaining power of the farmers, which is in line with earlier Sindh studies [15]. Direct marketing programs or cooperatives could increase the earnings of farmers by reducing reliance on intermediaries. Moreover, the fact that milk is self-consumed, as some fraction of households reports this, shows the dual nature of livestock as a source of food and income. Altogether, the paper highlights the formal, nutritional, management, and marketing constraints that restrict beef production in Shaheed Benazirabad. The results point towards/suggest the need to take actions like a better living environment, advancement of record keeping /animal identification, education of the farmers in feeding and health management, and the development of systematic marketing. Other than leading to an increase in

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the efficiency of beef production, these initiatives will also enhance food security and livelihoods in the Sindh province.

CONCLUSIONS

Finally, livestock production in the District Shaheed Benazirabad is largely dairy-based, and no special beef farms were found. The most prevalent ones are semi-pacca housing and middle herd sizes (11-50 animals). Feeding management involves stall feeding, grazing, and concentrate top-up, but there are little animal identification and record keeping (<11%). Farmers are big consumers of veterinary services (82.99%), but marketing, which is dominated by middlemen and self-medication are costing farmers efficiency and low profitability. These results indicate structural, nutritional, managerial, and marketing limitations that restrict the efficiency of the beef production capacity of the district.

Authors Contribution

Conceptualization: SAL, SMU, FURS, BY
Methodology: SAL, MRS, SMU
Formal analysis: SAL
Writing and Drafting: SAL, ASM
Review and Editing: SAL, ASM, MRS, SMU, FURS, BY

All authors approved the final manuscript and take responsibility for the integrity of the work.

Conflicts of Interest

All the authors declare no conflict of interest.

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REFERENCES

[1] Henchion M, Moloney AP, Hyland J, Zimmermann J, McCarthy S. Trends for Meat, Milk and Egg Consumption for the Next Decades and the Role Played by Livestock Systems in the Global Production of Proteins. Animal. 2021 Dec; 15: 100287. doi: 10.1016/j.animal.2021.100287.

[2] Godfray HC, Aveyard P, Garnett T, Hall JW, Key TJ, Lorimer J, Pierrehumbert RT *et al*. Meat consumption, health, and the environment. Science. 2018 Jul; 361(6399): eaam5324. doi: 10.1126/science.aam5324.

[3] Smith SB, Gotoh T, Greenwood PL. Current Situation and Future Prospects for Global Beef Production: Overview of Special Issue. Asian-Australasian Journal of Animal Sciences. 2018 May; 31(7): 927. doi: 10.5713/ajas.18.0405.

[4] Canton H. Food and Agriculture Organization of the United Nations—FAO. In the Europa Directory of International Organizations. 2021 2021 Jul: 297-305. doi: 10.4324/9781003179900-41.

[5] Hocquette JF, Ellies-Oury MP, Lherm M, Pineau C, Deblitz C, Farmer L. Current Situation and Future Prospects for Beef Production in Europe—A Review. Asian-Australasian Journal of Animal Sciences. 2018 May; 31(7): 1017. doi: 10.5713/ajas.18.0196.

[6] Troy DJ, Murray B, O'Sullivan A, Mooney T, Moloney AP, Kerry JP. Influence of Feeding Systems on the Eating Quality of Beef. Teagasc. 2002.

[7] Hoque M, Mondal S, Adusumilli S. Sustainable Livestock Production and Food Security. Emerging Issues in Climate Smart Livestock Production. 2022 Jan: 71-90. doi: 10.1016/B978-0-12-822265-2.00011-9,

[8] Magsi H, Randhawa AA, Shah AH. Halal Meat Production in Pakistan: Status and Prospects. Journal of Islamic Marketing. 2021 Jun; 12(5): 941-50. doi: 10.1108/JIMA-05-2019-0094.

[9] Fares MH, Raza S, Ahmad TI. Complementarity in Mixed Farming Systems Enhances the Smallholders Income: Evidence from Punjab, Pakistan. PLOS One. 2025 Apr; 20(4): e0319995. doi: 10.1371/journal.pone.0319995.

[10] Government of Pakistan, Ministry of Finance. Pakistan Economic Survey 2024–25. Islamabad: Ministry of Finance. 2025. Available from: https://www.finance.gov.pk/survey/chapter_25/Highlights.pdf

[11] Nadeem M and Ahmad MH. Sustaining the Dairy Sector in Pakistan: Challenges and Strategies for Growth. 2024.

[12] Pandey HO and Upadhyay D. Global Livestock Production Systems: Classification, Status, and Future Trends. Emerging Issues in Climate-Smart Livestock Production. 2022 Jan 1:47-70. doi: 10.1016/B978-0-12-822265-2.00017-X.

[13] Awan ZA, Akhtar K, Khan LA, Imran AU. Women's Participation and Their Constraints in Livestock Management Activities: A Case Study of District Bahawalpur in Punjab, Pakistan. International Journal of Veterinary Science and Research. 2021; 7(2): 083-7. doi: 10.17352/ijvsr.000085.

[14] Ahmad N, Yuan H, Zhu Z, Chu T, Liu J, Song Y. Pakistan Sheep Industry: Its Constraints and Future Trends. Tropical Animal Health and Production. 2024 Dec; 56(9): 399. doi: 10.1007/s11250-024-04246-x.

[15] Bellinguez A and Menon J. Sindh's Livestock: Getting to Know an Important but Neglected Sector. World Bank. 2022 May. doi: 10.1596/38354.

[16] Ali Khan E, Rizwan M, Wang Y, Munir F, Hua J. Challenges and Future Prospects of Pakistan's

DOI: https://doi.org/10.54393/mjz.v6i4.200

Animal Industry: Economic Potential, Emerging Trends, And Strategic Directions. Veterinary Sciences. 2025 Aug; 12(8): 733. doi: 10.3390/vetsci12080733.

[17] Ahmed RH, Schmidtmann C, Mugambe J, Thaller G. Effects of the Breeding Strategy Beef-On-Dairy at Animal, Farm and Sector Levels. Animals. 2023 Jul; 13(13): 2182. doi: 10.3390/ani13132182.

[18] Horst A and Watkins S. Enhancing Smallholder Incomes by Linking to High Value Markets in Pakistan's Punjab and Sindh Provinces. Washington, DC, USA: World Bank. 2022 Oct. doi: 10.1596/38227.

[19] Musa M and Mustafa MI. Livestock Feeds and Feeding Practices in Pakistan. Livestock Feeds and Feeding Practices in South Asia. 2020; 129(2): 3.

[20] Drouillard JS. Current Situation and Future Trends for Beef Production in the United States of America—A Review. Asian-Australasian Journal of Animal Sciences. 2018 Jun; 31(7): 1007. doi: 10.5713/ajas.18.0428.