



Goat Milk Production, Acceptability and Consumption in Yobe South Senatorial Zone, Yobe State- Nigeria

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ABSTRACT

This study was conducted to assess the production, acceptability and consumption of goat milk in Yobe South Senatorial Zone of Yobe state -Nigeria. Multistage sampling procedure was used to select 240 goat farmers across the four local government areas in the zone. Interview schedule was used to source information from the respondents. Structured questionnaire was used to collect data on the bio data, herd structure, ownership, management, goat milk production, acceptability and consumption of goat milk from the respondents. Data collected were analyzed using descriptive and percentage. Findings from the study showed that majority of the respondents (78.28 %) were males, married (75.56 %) and (64.67 %) aged 22-45 years. Most of the respondents (92.34%) had basic education and (68.47 %) of them had 1-15 years of rearing experience. Also (62.27 %) of the respondents had herd size of 6-10 goats. Results from the study also revealed that most of the respondents (76.24 %) managed their goats semi-intensively. Results from the study indicated that (66.30 %) of the respondents were ready to consume goat milk if available while (30.82 %) of them were ready to accept goat milk provided the problem of odor is addressed. However (6.70 %) of the respondents said they would not consume goat milk due to their tradition. The study recommended for government to step up awareness campaign to enlighten the populace about the nutritional and medicinal values, and other important attributes of goat milk to increase its acceptability and consumption. The study also recommend for government to provide high genetic value dairy goats to the farmers for enhanced volume of milk production.

Keywords: Goat Milk, Production, Acceptability, Consumption

INTRODUCTION

Population explosion and urbanization has led to the increased in demands for food of animal origin such as milk. In the North Eastern semi arid region of Nigeria especially Yobe State where desertification couple with the long period of the dry season (7-9 month i.e. October to June) during which nutritional requirements for lactating cattle for milk synthesis and let-down are not met. This leads to poor quantity and quality of milk available for consumption. In a study conducted by FAO (2011) reported that the per capita milk consumption in Nigeria is 8.1 kg/person/year which is grossly inadequate and below the world average consumption of 108 kg/person/year, and the 200 kg/person/year recommended by World Health Organization (WHO). Unlike other countries such as Western Sahara, Egypt, Burundi and Mauritania that produces 100%, 44.85% 38.63 % and 29.63 % respectively of their total domestic milk requirements from goat (FAO, 2016). Nigeria, depends solely on cattle for its milk (FAO, 2013) neglecting other milk producing livestock such as goats which are numerous.

Goats are potential dairy animals which increase the low level of milk production and supply in both developed and developing countries (Malau-Aduli *et al.*, 2001). Goat's milk is a nutrient dense food and it is often refers to as the nature's most complete food. Raw goat milk contains over 50 nutrients, including the vitamins A, B₁, B₆, B₁₂, C and E, minerals, enzymes, citric acid, amino acids, fatty acids, electrolytes, unsaturated fatty acids (Reita, 2012). It is also known to relieve and or cure many

diseases such as asthma, diabetes, brain and nerve disorders, kidney stones and other kidney disorders, liver and heart diseases, cancer, stomach ulcers, hypertension etc (Reita, 2012; Edward, 2014; Bond 2015).

Goat milk is often consumed by young children, the elderly, those who are ill, or have cow milk allergy and low tolerance to cow milk. The use of goat milk as a hypo-allergenic infant food or milk substitute in infants allergic to cow milk has been reported in many literature Park & Haenlein (2006). In addition, some recent comparative human allergy and growth studies have been revealed that hypoallergenicity and growth rate of children were better on goat milk than those on cow milk Park (2012). Goat is the most versatile domesticated animal and its milk was used for human consumption Park (2012). Certain chemical and nutritional compositions of goat milk, such as non-protein nitrogen and oligosaccharide contents are closer to human milk compared to those of the cow milk. However, large variations can occur in milk composition, depending on different factors such as breeds, diet, stage of lactation, environmental and management conditions in both species Park (2005).

Composition of goat milk differs from cow or human milk in higher digestibility, distinct alkalinity, higher buffering capacity, and certain therapeutic values in human medicine and nutrition Park (2005). Although there are certain species-specific differences in composition of milk, the basic nutrient composition of goat milk is similar to that of cow milk Park (2012). Goat milk, on the average, contains 12.2 % total solids, consisting of 3.8 % fat, 3.5 % protein, 4.1 % lactose and 0.8 % ash.

However, studies on goat milk production, acceptability and consumption in Yobe South Senatorial Zone has not been sufficiently investigated; thus the aim of this study was to assess the status of goat milk production, acceptability and consumption in zone.

MATERIALS AND METHODS

Description of the Study Area

The study was conducted in Yobe south Senatorial Zone of Yobe State Nigeria. The zone is comprises of four local government areas viz: Fika, Fune, Nangere and Potiskum. The zone is semi-arid with an average annual rainfall of 400-500 mm with two distinct seasons; the raining season last 90 –120 days and the dry season which is normally long (6-9 months). The average daily temperature ranges between 27-31⁰C (Alhassan, 2013). The vegetation is mainly grasses with scattered trees, shrubs and acacias. Being an agrarian zone, arable crops such as millet, sorghum, rice, groundnut, cowpea, tomato, pepper and sesame are cultivated in addition to livestock husbandry. In fact, the largest cattle market in West Africa (Potiskum Cattle Market) is in the zone. Goat, sheep and Cattle are the predominant livestock in the zone.

Data Collection and Analysis

Multistage sampling was used to randomly select two hundred and forty (240) goat farmers across the four local government areas of the zone using a well structured questionnaire. In the first stage, two wards in each of the four local government of the zone were selected based on concentration of goats. In the second stage, three villages within each of the eight (8) wards were selected. In the third stage, five (5) households who were involved in goats rearing were selected from each village. In the fourth stage two (2) respondents was purposely selected from each household thus giving a total of two hundred and forty respondents (240). Data collected from each of the respondent includes bio-data, herd structure, management, goat milk production, acceptability and consumption. The data collected were subsequently analyzed using descriptive statistic and simple percentage.

RESULTS AND DISCUSSION

Bio-data of goat rearers is presented in table 1. The results revealed that majority of the respondents (70.33 %) were males and married (73.67 %). Majority of the respondents were youth age range of 22 – 45 years. Majority (79.67%) of the respondents was literate and crop farmers (68.50 %) with (66.33 %) of them had 1 –10 years rearing experience. These findings were in agreement with the reports of Otchere *et al.*, 1987 and Garba, 2014.

Table 1: Bio data of the Respondents (n = 240)

Variable	Aspect	Frequency (n)	Percentage (%)
Gender	Male	184	76.67
	Female	56	23.33
Age	20-30	35	14.58
	31-40	34	14.17
	41-50	28	11.67
	Above -50	35	14.58
Marital Status	Married	198	82.50
	Single	12	5.00
	Widow	25	10.41
	Separated	5	2.08
Educational Status	Non formal	129	53.75
	Primary	71	29.58
	Secondary	22	9.17
	Tertiary	18	7.50
Secondary Occupation	Crop farming	182	75.83
	Civil servant	24	10.00
	Business	25	10.41
	Others	9	3.75
Rearing Experience	1 to 10	179	74.58
	11 to 20	36	15.00
	21 to 30	11	4.58
	above 30	4	1.67

Table 2: Goat Ownership and Structure in the Yobe South Senatorial Zone of Nigeria

Variable	Aspect	Frequency (n)	Percentage (%)
Do you own the goats?	Yes	194	80.83
	No	46	19.17
Sources of the goats	Purchase	175	72.92
	Inheritance	38	15.58
	Gift	17	7.08
	Others	10	4.17
Type of the Animal Reared	Goats only	152	63.33
	Sheep and Goats	53	22.08
	Cattle and Goat	25	10.42
	Cattle, Sheep and Goats	10	4.17
Breed of Goats Reared	Red Sokoto	132	55.00
	Sahelian breed	82	34.17
	Mix breed	21	8.75
	West African Dwarf (WAD)	5	2.08
Herd Size	1 to 5	60	25.00
	6 to 10	138	57.50
	11 to 15	25	10.42
	Above 15	17	7.08

Sources: Field Survey (November, 2019)

Goat ownership structure in Yobe South Senatorial zone state was presented in tables 2 above. The results revealed that 80.83% of the respondents owned goat which is an indication that they are highly valued in the zone. Majority (72.92 %) of the respondents owned their foundation stock through purchase from reputable producers with most (63.33 %) kept only goats. Similarly, the prolific nature, ease of management and less feed requirement of goat explain why most respondents (57.50 %) in the zone kept 5 to 10 goats per herd which agreed with the report of Mustapha et al, (2016). Red Sokoto (55.00 %) and the Sahelian (34.17 %) breeds of goat were the most reared in the zone as supported by the works of (Sodiya, 2008 and Garba, 2014) and Mustapha *et al.*, (2016).

Result from the study showed that farmers in the zone reared different types of livestock such as cattle, goat and sheep however most of the respondent keep goat only (63.33 %),while (56.92 %) of them reared both goat and sheep. This might not be unconnected with the ease of management and prolific nature of these livestock as supported by the work of (Muhammad, 2008). Goat management practices is presented in table 3 below; Results indicated that semi-intensive system of goat management was predominantly (60.00 %) practiced in the zone probably due to its low cost and labour requirement as supported by the findings of (Garba, 2014). Crop residues and fodders or shrubs were the predominant source of goats feed during the dry season as reported by (60.83 %) and (20.41 %) of the respondents respectively. This is also in agreement with the report of Mustapha *et al.*, (2016).

Table 3: Goats' Management in the Yobe South Senatorial Zone of Nigeria

Variable	Aspect	Frequency (n)	Percentages (%)
Production System	Intensive	34	14.17
	Extensive	62	25.83
	Semi Intensive	144	60.00
Sources of Feed during the Dry Season	Crop Residues	146	60.83
	Fodder-trees and Shrubs	49	20.41
	Range Land	31	12.91
	Grazing		
	Others	14	5.83

Sources: Field Survey (November, 2019)

Goat milk production and consumption in Yobe South Senatorial Zone of Nigeria is presented in Table 4. Result revealed that most (55.83 %) of the respondents do not milked their goats while only (44.17 %) of them milked theirs. Among those who milked their goats (68.75 %) of them milk their goat daily, while (26.25 %) of them milked twice daily and (5.00 %) milk them when the need arises. Sixty five (65.00 %) of the respondents used the milk for home consumption while about (26.67 %) of them used it for commercial purposes and only (8.33%) used the milk for both home and commercial purposes. These findings were in conformity with the works of Mustapha *et al.*, (2016).

Table 4: Perception of Goat Milk Production in the Yobe South Senatorial Zone of Nigeria

Variable	Aspect	Frequency (n)	Percentage (%)
Do you milked your lactating goats	Yes	106	44.17
	No	134	55.83
If yes, how frequent	Daily	165	68.75
	Twice a day	63	26.25
	When the need arise	12	5.00
Reasons for milking my goats	Home consumption	156	65.00
	For sale	64	26.67
	Both	20	8.33

Sources: Field Survey (November, 2019)

Table 5: Perception of Goat Milk Consumption in Yobe South Senatorial Zone of Nigeria

Variable	Aspect	Frequency (n)	Percentage (%)
Do you consume goat milk?	Yes	107	44.58
	No	133	55.42
If yes, why?	Nutritional value	74	30.83
	Medical value	86	35.83
	Taste	54	22.50
	Other reasons	26	10.83

Sources: Field Survey (November, 2019)

Results from table 5 on perception of goat milk consumption in Yobe South Senatorial Zone revealed that (44.58%) of the respondents consume goat milk while majority (55.42%) does not. Among the reasons indicated for the consumption of goats milk showed that (35.83%),(30.83%) and (22.50%) for medicinal value, nutritional value and taste respectively. These findings were also in agreement with the work of Lawal (2012).

Table 6: Reasons for not Consuming Goat Milk in Yobe South Senatorial Zone of Nigeria

Variable	Aspect	Frequency (n)	Percentage (%)
Reason for not consuming	Odour	84	35.00
	Non availability	49	20.42
	Lack of awareness	37	15.42
	Poor hygiene	32	13.33
	Tradition/taboo	23	9.58
	Allergy	15	6.25
Will you consume if these reasons are resolved?	Yes	198	82.50
	No	42	17.50

Source: Field Survey (November, 2019)

Results from the table 6 above revealed that majority of the respondents could not consume their goat milk due to odour (35.00 %), and (20.42 %) non availability, lack of awareness (15.42 %), Poor hygiene (13.33 %), tradition/taboo (9.58 %) and allergy (6.25 %). This results agrees with the works of Apata and Adewumi, (2010), Makun *et al*, (2010); Mustapha *et al*, (2016), and Yunusa (2016). The results further revealed that (82.50 %) of the respondents would consume goat milk if the identified reasons are resolved.

CONCLUSION AND RECOMMENDATIONS

Due to the growing demand for health foods, consumption of goat's milk is increasing in the study area because of, among other reasons, its nutritional and therapeutic values. The present study describes the existing situation regarding production, acceptability and consumption of goat's milk in Yobe South Senatorial Zone of Nigeria. The study concluded that goat milk is a nutrient dense natural food with medicinal value. However, production and consumption of goat milk in the zone was being affected by its scarcity, allergy, odor, culture/taboo and lack of awareness. The main factors motivating consumption of goat's milk were; nutritional and health benefits. It is, therefore, recommended that awareness and information be enhanced to the population in the study area on the nutritional and medicinal values, and other important attributes of goat's milk to increase its acceptance. The awareness should also be targeted at disabusing the minds of the people against the myths, culture or taboo surrounding goat milk consumption. Symposia and trainings should be organized by government to enlighten goat farmers on hygienic goat milk processing techniques for improved acceptability and consumption. It was also evident from the findings that scarcity of goat milk was a barrier to its consumption. Therefore, government should intervene by providing high genetic value dairy goats to farmers in the area to enhance the quantity of milk production.

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