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Full Length Research Paper

Contribution of Camel to the Meat Supply in Borno State, Nigeria

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A study was carried out to assess the contribution of camel to the meat supply in Borno State, Nigeria. Slaughter records from various abattoirs was collected in the ministry of Agriculture and Natural resources (MANR) Maiduguri from 1982 - 1991. Data collected for the study were analysed using descriptive statistics and statistical analysis (ANOVA)of total metric tonnes. The results indicated that a total of 373,417 Cattle; 608,199 Goats; 221,047 Sheep and 84,954 Camels were slaughtered in the State abattoirs within the period of ten years studied (1982 - 1991). The highest number of Cattle was slaughtered in 1982, with a total of 50,712, while the least was in 1986 with a total of 21,968. The highest number of goats was slaughtered in 1990 with a total of 82,570 while the least was slaughtered in 1983 with a total of 44,383. Also the highest number of sheep was slaughtered in 1990 with a total of 30,564; while the least was slaughtered in 1983 with a total of 5,151. The highest number of Camels was slaughtered in 1985 with a total of 19,284; while the least was in 1983 with a total of 3001. The total meat supply (Carcass Yield) of all the species of animal for the year under studied (1982 - 1991) was 107,948.3metric tonnes of meat. Out of this Cattle contributed 63,682.2 metric tonnes representing 62.21% of the total meat supply. The contribution of sheep was 5,526.20 metric tonnes representing 5.38% while the contribution of goats was 9,213.10 metric tonnes representing 8.97% of the total meat supply and Camels contributed 24,126.98 metric tonnes representing 23.52% to the total meat Supply. Statistical analysis (ANOVA) for the total metric tonnes shows that cattle is highly significant with MEAN SE = 579.436 + 15.399 (highest) followed by camels with 199.498 + 15.240. The tonnage contribution by goats and sheep are not different, and their meat are not distinguished by consumers. There was no significant difference between males and females slaughtered. The fact that slaughtered camels are statistically significant show its status as a meat animal in the semi-arid region.

Keywords: Meat, Camel, Cattle, Sheep, Goats and Slaughter.

INTRODUCTION

The importance of animal protein especially meat cannot be over emphasised as it contributes to physical and mental development from birth until growth stops. Therefore, it is apparent for every human being to consume sufficient amount of animal protein as insufficient of it can lead to some Nutritional diseases and reduced

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body resistant to diseases. There is need to match the growing population with sufficient amount of protein. (Akinimtimi, 2004).

Over the years, Nigerians have been finding it increasingly difficult to meet their demand for animal protein foods. This has resulted in the increasing importation of meat and milk products in recent years. The recommended Per Capita protein intake is estimated at 85.90g, out of which 34.00g should be of animal origin (Abdul Kadir, 1984). An average Nigerian consumes between 3.25g to 8.60g of animal protein per day as compared to 34g recommended by FAO (2002). Compared with other developed countries, the U.S.A., 64g; Denmark, 57g; United Kingdom, 54g and Germany, 49g. It is obvious that the intake level of Nigerians is grossly inadequate.

This low level of animal protein intake by Nigerian has raised enormous concern as it affects both physical and mental development of Nigerian youth and labour force (Akinmutinin, 2004). While solutions to these problems are being sought, it is pertinent to look for other potential sources of animal protein, that will reflect the current interest in the camel as an alternative source of protein and energy.

Concomitantly, it has been used in the countries it is found to substitute for other domestic stock as a source of milk and meat. There is reason to believe that the camel is now producing relatively more of the milk and absolutely of the meat, and is providing more energy in the form of transport and draught than it had hitherto.

Camels and dromedaries thrive in areas where the scanty rainfall results in only seasonal availability of fodder. The desert-living Camel is renowned for its ability to find sustenance from the fodder left untouched by other animals which, even if it were eaten is of such low nutritional value that it would not suffice to sustain them (Knoess, 1977; Williamson and Payne, 1978).

Therefore, the aim of this work is to find out the percentage contribution of camel to the meat supply in Borno State (Nigeria).This is possible because Camel meat is acceptable to the people who are predominantly Muslims. Camel is highly adapted to the semi-arid zone of the State and is not prohibited by any religion. The objective is to highlight the distribution, adaptation and meat potential of the Camel with a view to advocating for camel production with appropriate place in livestock production in the arid region of Nigeria. This paper will evaluate the percentage contribution of Camel to the total meat supply in Borno State (Nigeria) in relation to other livestock species.

MATERIALS AND METHODS

Location of the Study

Maiduguri is the Capital of Borno State, one of the thirty six states in Nigeria. The State has the largest area of about 116,5595 km^2, this constitute about 8-12% of the total area of the country (statistical year book, 1980). The state shares border with States of Yobe, Adamawa and Jigawa. It also shares international boundaries with three Republics of Tchad, Niger and Cameroon. Maiduguri is situated at the Latitude 11.5^0 North, and longitude 30.05^0 East and an Altitude of 34m above the sea level. (Alaku and Moruppa, 1983). Maiduguri lies within the Sahel region of West Africa and is noted for great climatic and seasonal variations. The area usually has a very short period (3 - 4 months) of rainfall and a very long dry season.

Borno state is the largest producer of livestock in Nigeria, it is estimated that Borno state contributes about 40% to the livestock population in Nigeria. (Alaku and Igene, 1983), owing largely to its unique position where it shares borders with the three Northern neighbouring countries.

Collection of Data

The data used for this study were the slaughtered animal records from the Maiduguri abattoir which represents the data from all the local government areas of the state. This abattoir is the largest in capacity and situated few meters away from the famous Maiduguri cattle market.
The data were for the slaughtered cattle, camels, sheeps and goats between 1982 and 1991.

Estimation of Carcass Yield

The average carcass yield of each animal was estimated from the body weight frequently taken of slaughtered animals at the abattoir and with the guide from the estimate made by (Sade and Alaku 1991) it was as follows:

i. Cattle: carcass yield is estimated to be 185kg per cattle or 49.33% dressing weight with average liveweight of 375kg.

ii. Camel: Carcass yield is estimated to be 284kg per camel or 53.38% dressing weight with average liveweight of 532kg.

iii. Sheep: Carcass yield is estimated to be 25kg per sheep or 47.17% dressing weight with average liveweight of 53kg.

iv. Goat: carcass yield is estimated to be 15kg per goat or 45.46% dressing weight with average liveweight of 33kg.

It must be noted that there are variations in the weight of animals during different seasons and also variation in individual weight. These average weights cover those and above the estimated weight.

RESULTS AND DISCUSSION

The results for the total number of livestock species slaughtered between 1982 – 1991 is presented in table 1. A total of 373,417 cattle, 608,199 Goats 221,047 sheep and 84,954 camel were slaughtered in the period under review.

Table 1. Total number of Cattles, Goats, Sheep and Camels slaughtered (1982 - 1991)

Year	Cattle	Goats	Sheep	Camel
1982	50,712	48,662	10,651	5,318
1983	45,247	44,383	5,151	3,001
1984	48,445	59,667	18,713	14,094
1985	38,568	56,784	27,957	19,284
1986	21,968	45,245	25,506	11,386
1987	28,054	71,332	21,971	6,828
1988	31,572	68,937	30,365	8,597
1989	31,903	61,332	27,971	4,507
1990	36,460	82,570	30,564	5864
1991	40,448	69,236	22,554	6,080
TOTAL	373,417	608,199	221,047	84,954

Source: Ministry of Agriculture and Natural Resources Borno State (Abattoir Record) 1992.

Table 2. Anova For Metric Tonnes

Source of Variation	d.f	SS	MS	F-ratio
Total	12	22398512	-	-
Year	9	767500	85277	11.754**
Animal	3	21631013	7210337.6	993.816**
Year x Animal	27	2899104.8	107374.25	14.800**
Error	440	7255.200	-	-

** = P< 0.01

Statistical analysis (ANOVA) for the total metric tonnes shows that the effects of year, Animal and Animal X year were highly significant (P<0.01).

From the above table, the contribution of cattle to total meat production is highly significant with Mean $\pm$ SE = 579.436 $\pm$ 15.399 (highest) followed by camels with 199.498 $\pm$ 15.240. The tonnage contribution by sheep and goat are not different, and their meat are not distinguished by consumers.

The total meat supply (carcass yield) of all the species of animals for the year studied (1982 - 1991) was107, 948.30 metric tonnes of meat. Out of this cattle contributes 63,682.20 metric tonnes of meat representing 62.21% of the total meat supply while the contribution of goat was 9,213 metric tonnes representing 8.97% of the total meat supply. The contribution of sheep was 5526.2 metric tonnes representing 5.38% and lastly camel contributed 24,126.98 metric tonnes, representing 23.52% to the total meat supply as shown in table II.

Tonnage Contribution by Camels

From the above it is clear that the effects of season and year were highly significant while that of season X Year is significant.

From table VI, It is clearly shown that camel meat is highly desirable, it has acceptable amount of protein very high amount of minerals (Ash) and low amount of fat adequate for the body.

Therefore camel meat could be recommended for persons with Arterioclerosis. These are people with chronic disease of the heart.

RECOMMENDATION AND CONCLUSION

From the study we can see that a total of 373,417 cattle contributed 62.21% 608,199 goats 8.97%, 221,047 sheep

Table3. Mean Metric Tonnes of Meat by Animals

Species		Mean ± SE
1.	Cattle	579.436 ± 15.399[a]
2.	Goats	75.945 ± 2.287[b]
3.	Sheep	46.769 ± 2.376[b]
4.	Camels	199.498 ± 15.240[c]

abc/Mean within column not followed by the same superscript letter are significantly different (P< 0.05)

Table 4. Anova for Slaughtered Camels

Source of Variation	d.f	SS	MS	F-ratio
Total	12	2345302.2	195441.85	-
Season	3	981960.5	327320.18	41.95**
Year	9	1363341.6	151482.40	19.418**
Seaon x Year	27	446584	16540.48	2.120**
Error	80	624097.92	7801.224	-
** = p< 0.01; * = p< 0.05				

Table 5. Annual Percentage Contribution In Metric Tonnes of Cattles, Goats, Sheep And Camels To Meat Supply In Maiduguri 1982 - 1991 Borno State.

Year	Cattle Total	%	Goats Total	%	Sheep Total	%	Camels Total	%	Total
1982	9381.70	78.92	729.93	6.14	266.28	2.24	1510.30	12.70	11888.00
1983	8370.70	83.56	665.75	6.65	128.77	1.29	852.28	8.51	10018.00
1984	8962.30	62.55	895.01	6.25	467.83	3.27	4002.70	27.94	14328.00
1985	1735.10	50.38	851.76	6.01	698.93	4.94	5476.70	38.67	14162.00
1986	4064.10	46.69	768.68	8.83	637.65	7.33	3233.60	37.15	8704.00
1987	5190.00	59.32	1070.00	12.23	549.28	6.28	1939.20	22.17	8748.50
1988	5840.80	57.97	1034.10	10.26	759.13	7.53	2441.50	24.23	10076.00
1989	5902.10	67.13	920.75	10.47	690.38	7.85	1278.60	14.54	8791.80
1990	6745.10	64.77	1238.60	11.89	764.10	7.34	1665.40	15.99	10413.00
1991	7490.30	69.23	1038.50	9.60	563.85	5.21	1726.70	15.96	10819.00
Total	63682.20	62.21	9213.10	8.97	5526.20	5.38	24126.98	23.52	107948.30

Table 6. Proportional Composition of Carcass of some animal species including Camel.

Animal Species	Liveweight kg	Protein %	Fat %	Ash%
Goat [a]	32.20	62.33	25.96	3.81
Cattle [b]	295.50	65.00	17.90	15.10
Sheep [c]	38.40	31.20	59.50	9.00
Camel [d]	350.00	52.76	0 -7 .80	9-38.10

Source: *a – Hass and Horst, (1979); b – preston and Willis, (1976); c – Owen (1976);* d –Burgemeister (1978).

5.38% and just 84,954. Camels contributed a whopping figure of 23.52% next to cattle and the fact that slaughtered camels are statistically significant show its status as a meat animal in the semi arid region.

Increasing camel production therefore will not in small means reduce the dare animal protein deficiencies in the country.

The importance of raising camel is further buttressed by the slaughtered figures, by the superior lean quantities of camel to the total meat supply and the high nutrient content of the milk and meat.

As Nigerian generally consume food not well furnished with animal protein, the camel meat and milk can contribute towards improving the dietry protein intake and enhance the consumption of quality protein by the people in this semi-arid region where there is grave interference from thermal factors to the livestock industry and consequently to the entire country.

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