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Socio-economic characteristics and husbandry practices of cattle breeders in the Vina division, Cameroon

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In order to assess socio-economic characteristics of cattle breeders and their effect on farmers' practices, a survey was carried out in Vina division within the Adamawa highlands of Cameroon, from November, 2009 to October, 2010. Data were collected from 159 farmers in 9 localities, using a structured questionnaire. Information on breeder's ethnic group, age, marital status, education level, number of children, reasons for rearing cattle, labor distribution, herd size and composition, feeding and reproductive practices were obtained. Many (64.8%) cattle breeders were from the *Peulh* and *Mbororo* ethnic groups. More than 59% of the farmers were between 26 and 45 years old. The educational level was mostly primary and coranic. Wealth accumulation and social status were the main reasons for cattle breeding. The reasons for keeping cattle varied with ethnic group, age and educational level of farmers. Herd size ranged from 50 to 250 cattle. Health activities were carried out by herd owners. The *Gudali* zebu (48%) was the most common breed. More than 90% of cattle owners responded to practice feed supplementation with salt, cotton seed cake and cereal bran. Farmer's education level had an effect on supplementation practices. There was no significant difference (Z = 0.29) between the ability to detect estrus or not of cattle breeders. Free mating was the common breeding practice. Udder and abdomen development were the main criteria for pregnancy diagnosis.

Key words: Socio-economic characteristics, breeding practices, cattle, Adamawa, Cameroon.

INTRODUCTION

In sub-Saharan Africa, cattle population varies widely in productivity. Africa contributes about 15% of the world cattle population and 7 and 3% of the world meat and milk production, respectively (Yishak et al., 1999). This low productivity has been attributed to factors such as low genetic potentials of local breeds, inappropriate

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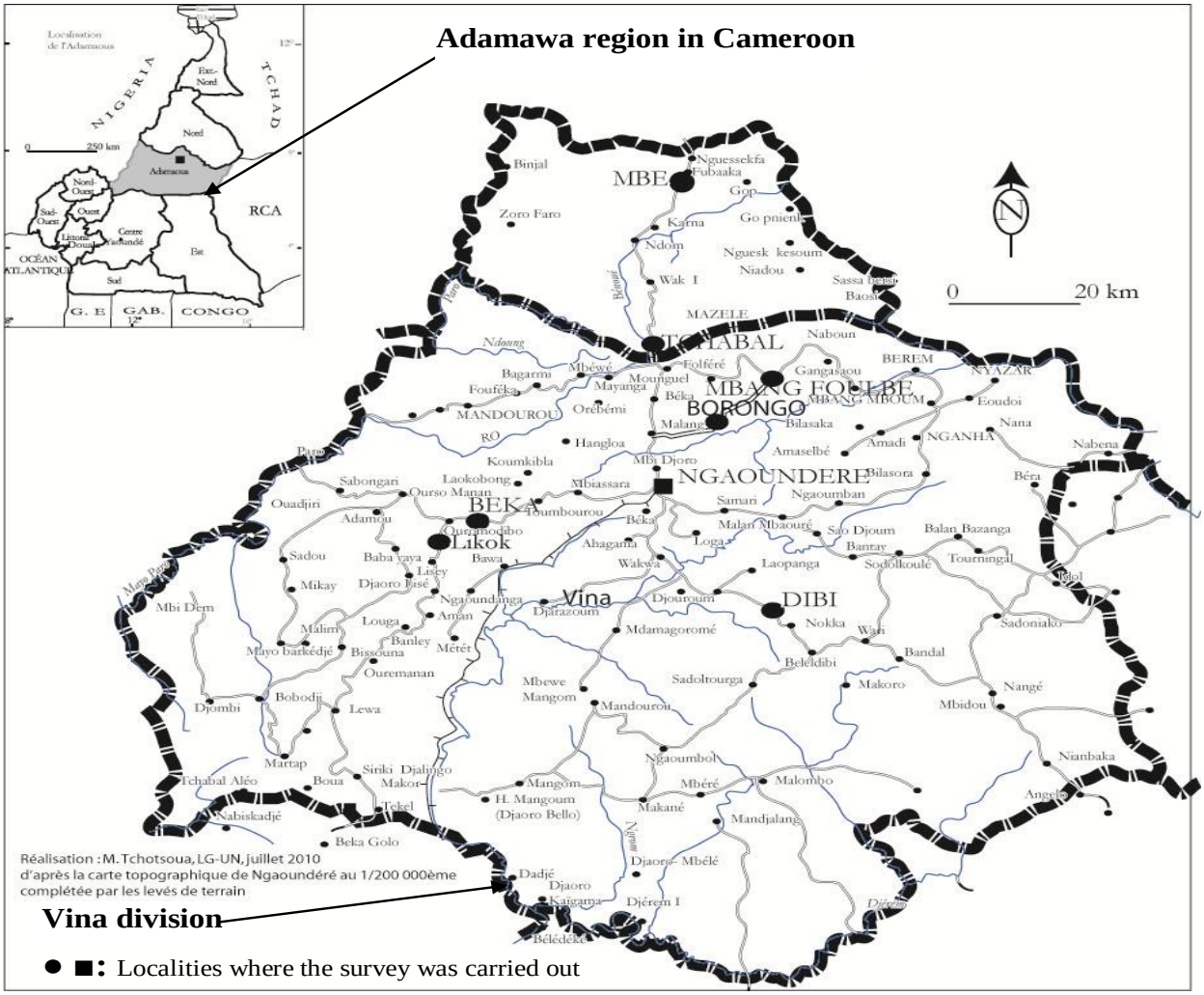

Figure 1. Study location.

health and feeding management practices, low growth and reproductive performances (Messine et al., 2007a).

In Cameroon, cattle reproductive performances are low. For example, age at first calving is up to 53 months, while calving interval is around 18 months (Njoya, 1997). Mean calving to conception interval of 268 days has been reported in *Gudali* zebu (Messine et al., 2007b). Calves mortality rates are above 50% in the peri-urban area of Ngaoundere in Adamawa plateau of Cameroon (Mingoas et al., 2006). These poor performances could be due to a number of constraints among which diseases such as trypanosomosis (Mbahin et al., 2006) and socio-economic characteristics of livestock breeders. However, data on the socio-economic and management characteristics of farming systems are essential in order to plan and implement effective development strategies (Schwalbach et al., 2001).

The objective of the study was to assess socio-economic characteristics of cattle breeders and their effect on farmers' practices.

MATERIALS AND METHODS

The study area

The survey was carried out in the Vina division (Figure 1), which covers 17196 km^2 within the Adamawa highlands of Cameroon (LN6 to 8º; LE 10 to 16º). The cattle population in the Adamawa Region is estimated to be 60% of the 6 millions of the country. The region is situated between 900 and 1500 m altitude (Rippstein, 1985; Njwé and Issa, 1990), with basaltic and ferralitic soils. Rainfall ranges from 1500 to 2000 mm during 7 months (April to October) and 5 months of dry season (November to March). Annual mean temperature is 23°C with a maximum of 34°C in March and a minimum of 10°C in January. The vegetation is made up of altitude grasslands with *Sporobolus* spp. and *Setaria sphacelata*, woody savannah with *Hyparrhenia* spp and *Andropogon gayanus* mainly represented, and also lowlands constituted of *Loudetia phragmitoïdes* and *Pennisetum purpureum*. Among forage trees are, *Daniella oliveri*, *Piliostigma thoningii*, *Hymenocardia acida* and

Table 1. Study population and sample size.

Locality	Number of farmers	Percentage (%)
Beka	10	6.28
Borongo	10	6.28
Idol	20	12.60
Likok	23	14.50
Mbang Foulbe	10	6.28
Mbe	35	22.00
Ngaoundere	31	6.28
Tchabal	10	19.50
Vina	10	6.28
Total	159	100.00

Lophira lanceolata (Pamo and Yonkeu, 1985). Even though the region was declared tsetse fly free, many infested foci still remain (Cuisance, 1991).

Survey design and data collection

From November, 2009 to October, 2010, data were collected on socio-economic characteristics of breeders and livestock reproductive practices. A structured questionnaire was used to collect data through interview either in local language (*fulfuldé*) with the aid of a trusted translator or in French. A total of 9 localities were selected by random number generation using the map of Vina division (Table 1). The questionnaire was administered to 159 farmers randomly selected within each locality. The main aspects investigated were breeder's ethnic group, age, marital status, educational level, number of children, reasons for keeping cattle, labor distribution, herd size and composition, feeding and reproductive practices.

Data analysis

Statistical analyses were performed with the aid of SPSS for windows software programme Release 16.0 (2007). Differences between percentages were analyzed using Z-test, and a value of $Z > 1.96$ was considered statistically significant.

RESULTS

Socio-economic characteristics of cattle breeders

Many cattle breeders were from the *Peulh* and *Mbororo*'s ethnic groups (Table 2). These ethnic groups are well known for cattle breeding. However, an increasing interest of other ethnic groups in cattle breeding in the region has been observed in the study.

More than 59% of cattle breeders were between 26 to 45 years old (Table 2). This range class was significantly higher than the 15 - 25 ($Z = 4.53$), 46 - 60 ($Z = 4.77$) and above 60 ($Z = 5.91$) years age groups.

Many (63%) of cattle breeders were married and most (62.61%) of the children were up to 10 years old. The educational level was mostly primary (42.75%) and non-formal education (40.25%). However, up to 13.85% of them had secondary school education.

Reasons for keeping cattle

The main reasons for cattle breeding were financial (42.10%) and social status (43.80%) (Table 3). There was a significant difference ($Z = 3.18$) between the latter parameters and the pure social.

Farmers breeding reasons varied with their ethnic group, age and educational level. The *Mbororos* had pure social reasons for rearing cattle. However, there was no significant difference ($Z = 0.18$) with the other reasons. The *Peulh* instead had both financial (wealth accumulation) and social reasons. Other ethnic groups in the study area (mainly from the Far North Cameroon) shared the same reasons with the latter groups (Table 3). The main objective of breeding animals for farmers less than 46 years was finance (Table 3). However, 30% of cattle breeders of 26 to 45 years old had both social and wealth objectives as their main reasons for rearing cattle. There were significant differences ($Z = 1.98$) between those who were 46 to 60 years old, those above 60 years ($Z = 2.68$) and those who were less than 25 years old ($Z = 2.14$)

Farmers with low education level (no formal education) had both financial, wealth and social objectives. This was similar ($Z = 1.09$) to those of primary school level, but significantly different ($Z = 2.23$) compared to those of secondary school level (Table 3).

Labour distribution

Labourers undertook most of the tasks on the farm, except health care activities that were carried out by herd owners (Table 4). Milk collection was done ($Z = 6.00$) by male labourers. In general, men and children were more

Table 2. Percentage distribution of some selected socio-economic characteristics of cattle breeders.

Category	Frequency	Percentage
Ethnic groups (n = 159)		
Mbororo	24	15.09[b]
Peulh	79	49.70[a]
Mboum	14	8.80[c]
Gbaya	12	7.55[c]
Haoussa	5	3.14[c]
Others*	25	15.72[b]
Average age (n = 159)		
15 - 25 years	31	19.50[b]
26 - 45 years	94	59.12[a]
46 - 60 years	27	16.98[b]
>60 years	7	4.40[c]
Marital status (n = 159)		
Married	100	62.89[a]
Bachelor, divorced or widower	59	37.11[b]
Number of children (n = 159)		
0 – 10 years	99	62.26[a]
11 – 20 years	45	28.30[b]
> 20 years	15	9.44[c]
Education level (n = 159)		
No formal education	64	40.25[a]
Primary school	68	42.75[a]
Secondary school	22	13.85[b]
High school	5	3.14[b]

*Ethnic groups from the Far North region of Cameroon (Massa, Moufou, Moundang, Toupouri, Kapsiki and Guiziga) ; n = number of respondents. a, b, c: values in the same column with the same superscript are not different at 5% level of significance.

involved in livestock activities than women.

Herd management

Herd size ranged from less than 50 to more than 250 cattle (Table 5). More than 37% of herds had 50 to 100 cattle. The latter proportion was not statistically different from that of herds with less than 50 cattle (Z = 1.09). However, 11.51% of herds with more than 250 cattle had almost 49% of the overall cattle population. Cattle breeders of 26 to 45 years (59.12%) retained more than 40% of the total cattle heads. There were significant differences with those of 15 to 25 years (Z = 4.53), 46 to 60 years (Z = 4.77) and more than 60 years (Z = 5.91) age groups (Table 6).

The local *Gudali* zebu was predominant breed (38%) of the total cattle population, followed by the *Mbororo* zebu (Table 7). The least encountered numerous was the *Namchi* taurine which is a threatened indigenous breed from the North region of Cameroon. Bulls represented up to 44% of herds. Within a herd, cows were significantly higher in number than young bulls (Z = 10.37), bulls (Z = 24.84), heifers (Z = 28.11) and castrates (Z = 33.87).

Feeding practices

A variety of products and by-products such as salt, cotton seed cake and cereal brands were used for the supplementation of animal feeds. More than 90% of cattle owners responded that supplementation was mainly with salt (Sodium chloride) and cotton seed cake, but subsidiary with cereal brand (Table 8), especially farm residues and kitchen waste.

Farmer's education level had an effect on supplementation

Table 3. Reasons for keeping cattle and effect of cattle breeder's ethnic group, age and educational level on breeding objectives

Category	Breeding objectives					
	Financial		Social (prestige, ceremonies, sacrifices)		Wealth and social	
	n	%	n	%	n	%
Overall cattle breeders (n = 53)	66	43.10^{A}	20	13.10^{B}	67	43.80^{A}
Ethnic groups						
Mbororo (n = 23)	5	3.27^{abA}	9	5.88^{aA}	9	5.88^{aB}
Peulh (n = 78)	35	22.88^{aA}	6	3.92^{aA}	37	24.18^{aA}
Mboum (n = 13)	8	5.23^{abA}	1	0.65^{aA}	4	2.61^{bA}
Gbaya (n = 11)	7	4.58^{abA}	1	0.65^{aA}	3	1.96^{bA}
Haoussa (n = 4)	1	0.65^{bA}	1	0.65^{aA}	2	1.31^{bA}
Others* (n = 24)	10	6.54^{abA}	2	1.31^{aA}	12	7.84^{abA}
Age groups (n = 153)						
15 - 25 years (n = 30)	26	16.99^{a}	1	0.65^{a}	3	1.96^{b}
26 - 45 years (n = 90)	32	20.92^{a}	12	7.84^{a}	46	30.07^{a}
46 - 60 years (n = 26)	5	3.27^{a}	6	3.92^{a}	15	9.80^{b}
> 60 years (n = 7)	3	1.96^{a}	1	0.65^{a}	3	1.96^{b}
Total (n = 153)	66	43.14^{A}	20	13.07^{B}	67	43.79^{A}
Education level (n = 153)						
No formal education (n = 62)	16	10.44^{a}	6	3.92^{a}	40	26.14^{a}
Primary school (n = 66)	33	21.57^{a}	10	6.54^{a}	23	15.03^{ab}
Secondary school (n = 20)	13	8.50^{a}	3	1.96^{a}	4	2.61^{b}
High school (n = 5)	4	2.61^{a}	1	0.65^{a}	0	0
Total (n = 153)	66	43.14^{A}	20	13.07^{B}	67	43.79^{A}

^{a,b}Values in the same column with the same superscript are not different at 5% level of significance; ^{A,B} values in the same row with the same superscript are not different at 5% level of significance; n = number of respondents; *Ethnic groups from the Far North region of Cameroon *(Massa, Moufou, Moundang, Toupouri, Kapsiki* and *Guiziga)*.

Table 4. Distribution (%) of different tasks in livestock production.

Group	Tasks					
	Feeding (n = 156)	Grazing (n = 157)	Milking (n = 155)	Reproduction (n = 155)	Health care (n = 123)	Housing (n = 156)
Men	2.56^{c} (4)	1.27^{b} (2)	0.65^{c} (1)	26.45^{b} (41)	98.37^{a} (121)	1.28^{b} (2)
Women	0.65^{c} (1)	-	23.87^{b} (37)	-	-	-
Children	19.87^{b} (31)	21.66^{b} (34)	2.58^{c} (4)	4.52^{c} (7)	-	10.26^{b} (16)
Laborers	76.92^{a} (120)	77.07^{a} (121)	72.90^{a} (113)	69.03^{a} (107)	1.63^{b} (2)	88.46^{a} (138)

Numbers in brackets = frequencies; ^{a,b,c} Values in the same column or the same row with the same superscript are not different at 5% level of significance; n = number of respondents.

Table 5. Herd size distribution.

Distribution	Herd size						
	< 50	50 - 100	100 - 150	150 - 200	200 - 250	> 250	Total
No. of herds sampled	37	52	20	10	4	16	139
Percentage (%) of total herds	26.61^{ab}	37.41^{a}	14.40^{b}	7.20^{b}	2.87^{b}	11.51^{cb}	100.00
No. of cattle	1 332	3 664	2 553	1 718	894	9 725	19 886
Percentage (%) of total cattle	6.70^{d}	18.42^{b}	12.85^{b}	8.63^{c}	4.50^{c}	48.90^{a}	100.00

^{a,b,c}Values in the same row with the same superscript are not different at 5% level of significance.

Table 6. Effect of cattle breeder's age on herd size.

Cattle breeder's age (n = 159)	Percentage (%) of cattle breeder's / total	Percentage (%) of total cattle
15 - 25 years (n = 31)	19.50[b]	7.52
26 - 45 years (n = 94)	59.12[a]	40.34
46 - 60 years (n = 27)	16.98[b]	31.00
> 60 years (n = 7)	4.40[b]	21.14

[a,b]Values in the same column with the same superscript are not different at 5% level of significance; n = number of respondents.

Table 7. Average herd composition.

Animal category/breeds	Frequency ± SE (Percentage)					
	Goudali **zebu**	***Mbororo*** **zebu**	***Ndama*** **taurine**	***Namchi*** **taurine**	**Crossbreeds**	**Total**
Heifers (1 - 3 years)	1419 ± 23.36 (6.40)[a3]	1047 ± 15.35 (4.72)[a3]	217 ± 8.35 (0.98)[b1]	0 (0.00)	159 ± 8.81 (0.72)[b2]	2842 ± 19.65 (12.81)[4]
Cows (> 3 years)	4108 ± 37.41 (18.52)[a1]	2887 ± 26.48 (13.02)[b1]	491 ± 13.67 (2.21)[c1]	74 ± 2.62 (0.33)[c1]	430 ± 15.91 (1.94)[c2]	7990 ± 20.62 (36.02)[1]
Young bulls (1 - 3 years)	2653 ± 18.98 (11.96)[a2]	2183 ± 15.53 (9.84)[b2]	298 ± 4.42 (1.34)[d1]	39 ± 1.26 (0.18)[d1]	1013 ± 21.72 (4.57)[c1]	6186 ± 37.20 (27.89)[2]
Bulls (> 3 years)	1680 ± 28.44 (7.57)[a3]	1207 ± 11.46 (5.44)[b3]	148 ± 9.80 (0.67)[c1,2]	29 ± 1.67 (0.13)[c1]	421 ± 20.44 (1.90)[c2]	3485 ± 61.73 (15.71)[3]
Castrates	788 ± 13.31 (3.55)[a3]	642 ± 11.46 (2.89)[a4]	37 ± 1.34 (0.17)[b2]	17 ± 0.72 (0.08)[b1]	195 ± 12.82 (0.88)[b2]	1679 ± 11.16 (7.57)[5]
Total	10648 ± 113.15 (48.00)[a]	7966 ± 81.19 (35.91)[b]	1191 ± 35.21 (5.37)[d]	159 ± 6.27 (0.72)[e]	2218 ± 76.25 (10.00)[c]	22182 ± 244.33 (100.00)

[a,b,c,d]Values in the same row with the same superscript are not different at 5% level of significance. [1, 2, 3, 4, 5] Values in the same column with the same superscript are not different at 5% level of significance; **SE,** Standard error.

Table 8. Cattle supplementation.

No. of cattle owners	Frequency	Percentage of the total
No. supplementation (n = 156)	1	0.64
Supplementation with:		
-Cotton seed cake (n = 152)	147	96.71[a]
-Salt/Sodium chloride (n = 155)	153	98.70[a]
-Natron/Potassium chloride (n = 156)	37	23.71[c]
-Cereal bran (n = 157)	94	59.87[b]

[a,b,c]Values in the same column with the same superscript are not different at 5% level of significance; n = number of respondents.

practices. Cattle breeders who attended primary school used more cotton seed cake and salt than natron (indigenous salt or potassium chloride) and cereal brand, while those without formal education gave all the products available. However, no significant difference was found (Table 9).

Table 9. Effect of breeder's educational level on supplementation practices.

Education level	Cotton seed cake (n = 147)	Salt (n = 153)	Natron (n = 37)	Cereal bran (n = 94)
No. formal education	41.50[a]	40.53[a]	45.95[a]	41.48[a]
Primary school	44.22[a]	42.48[a]	29.73[a]	37.24[a]
Secondary school	13.60[b]	16.34[b]	24.32[a]	21.28[a]
High school	0.68[b]	0.65[b]	0.00	0.00

[a,b] Values in the same column and the same raw with the same superscript are not different at 5% level of significance; n = number of respondents.

Table 10. Frequencies of supplementation with various products.

Rhythm of distribution	Cotton seed cake frequency (%) (n = 152)	Salt frequency (%) (n = 155)	Natron frequency (%) (n = 156)	Cereal bran frequency (%) (n = 157)
1 - 2 times/day	25 (16.45)[b]	14 (9.03)[b]	17 (10.90)[b]	20 (12.73)[b]
1 - 2 times/week	100 (65.79)[a]	108 (69.68)[a]	80 (51.30)[a]	94 (57.87)[a]
1 - 2 times/month	15 (9.87)[c]	25 (16.13)[b]	50 (32.05)[a]	17 (10.82)[b]
1 - 3 times/month	12 (7.89)[c]	8 (5.16)[b]	8 (5.13)[b]	27 (17.20)[b]

[a,b,c] Values in the same row or the same column with the same superscript are not different at 5% level of significance; n = number of respondents.

In the case of supplementation with cotton seed cake, there was a significant difference between breeders without formal education and those with secondary (Z = 4.24) and higher school (Z = 3.11) levels.

Supplementation frequencies ranged from 1 to 2 times/ day to 1 to 3 times/month (Table 10). In general, all the products were distributed mostly 1 to 2 times per week with no significant difference between the products. However, natron was given 1 to 2 times weekly or monthly but this did not show any significant difference.

Cattle reproductive practices

In the study area, there was no significant difference (Z = 0.29) between livestock breeders who could detect oestrus and those who could not (Table 11).

Many (39.39%) of them responded that evidence of oestrus is the acceptance of a male by a female. However, few of them also monitored oestrus through swelling of vulva, excitement and male seeking.

Most (75.47%) cattle breeders replied that 2 to 3 years was the average mating age. This observation was significantly different from those who considered 4 to 5 years as the average age at mating. Free mating was the common system. It was significantly different to the introduction of bulls among females, while bull conformation was the criteria for selection (Table 11). Udder and abdomen development were the main criteria for pregnancy diagnosis. Responses for these two criteria were significantly higher than for the absence of heat (Table 11). Female isolation at calving was not common (0.63%). The average age of suckling was 1 to 2 years (94.96%).

Farmers of 26 to 45 years old (54.17%) age group considered 2 to 3 years as average age at mating. This observation was statistically different to those of 15 to 25 years (Z = 2.98), 46 to 60 years (Z = 3.68) and more than 60 years (Z = 4.48) age groups.

Overall 2 to 3 years was the average range for sexual maturity and mating (Table 12). More than 55% of farmers reported that the main sign of stillbirth is the presence of blood in the vulva. Most (73.64%) of them revealed that abortions could occur at any period of pregnancy and at any season (Table 13). Trypanosomosis was considered by over 74% of the farmers as the main disease with negative impact on reproduction, followed by foot and mouth disease.

DISCUSSION

The findings of this study agree with earlier reports (Boutrais, 1982) that the *Peulh* and *Mbororo*'s ethnic groups are traditional cattle breeders in the Adamawa region, as well as in the neighboring Central African Republic (Boutrais and Crouail, 1986). In the Guinean peri-urban zone, 98.9% of farmers are *Peulhs* (Somda et al., 2004). The present study also revealed other ethnic groups in the Adamawa region such as the *Massa, Moufou, Moundang*, *Toupouri, Kapsiki* and *Guiziga* from the Far North region of Cameroon who are also passionate about cattle keeping. Contrary to *Peulh* and *Mbororo* ethnic groups, the other groups had primary or secondary educational level. This could be of a great asset to the planning and implementation of development

Table 11. Breeding practices.

Practice	n	Percentage (%) of the total
Oestrus detection (n = 158)		
No detection	88	55.70[a]
Detection	70	44.30[a]
Signs of oestrus (n = 158)		
Loss of appetite	6	1.53[c]
Excitement	94	24.04[b]
Male seeking	73	18.67[b]
Vulva swelling	64	16.37[b]
Riding acceptance	154	39.39[a]
Breeding average age (n = 159)		
2 - 3 years	120	75.47[a]
4 - 5 years	16	10.06[b]
No idea	23	14.47[b]
Breeding practices (n = 159)		
Free mating	139	87.42[a]
Introduction of the bull among females	20	12.58[b]
Selection of bulls (n = 159)		
Conformation	139	87.42[a]
Color of the skin	10	6.28[b]
Aspect of the horns	45	28.30[b]
Pregnancy diagnosis (n = 159)		
Abdomen development	117	35.35[a]
Absence of heat	62	18.73[b]
Udder development	152	45.92[a]
Delivery management (n = 159)		
Female isolation	1	0.63[b]
No isolation	158	99.37[a]
Calves suckling average age (n = 159)		
1 - 2 years	151	94.96[a]
More than 2 years	8	5.03[b]

[a,b,c]Values in the same column with the same superscript are not different at 5% level of significance; n = number of respondents.

Table 12. Effect of cattle breeder's age on mating average age.

Breeder's age	Mating average age			
	2 - 3 years (n = 120)		4 - 5 years (n = 16)	
	n	%	n	%
15 - 25 years	29	24.17[b]	3	18.7 [a]
26 - 45 years	65	54.17[a]	4	25.00[a]
46 - 60 years	19	15.83[b]	8	50.00[a]
> 60 years	7	5.83[b]	1	6.25[a]

[a,b]Values in the same column and the same raw with the same superscript are not different at 5% level of significance; n = number of respondents.

Table 13. Reproductive diseases and disorders.

Practices	n	Percentage (%) of the total
Stillbirths recognition (n = 159)		
No criteria	31	19.50[b]
Udder reduction	8	5.03[b]
Abdomen reduction	1	0.63[b]
Heat reappearance	30	18.87[b]
Bloody vulva	89	55.97[a]
Period of abortions (n = 129)		
Earlier pregnancy period	29	22.48[b]
Mid pregnancy	3	2.33[b]
End of the pregnancy	2	1.55[b]
Any period	95	73.64[a]
Season of abortions (n = 138)		
Dry season	6	4.35[b]
Rainy season	0	0
All seasons	132	95.65[a]
Diseases with possible impact on reproduction (n = 145)		
Trypanosomosis	108	74.48[a]
Foot and mouth disease	21	14.48[b]
Contagious bovine pleuropneumonia	0	0
Dermatosis	4	2.76[b]
Candidiasis	0	0
Brucellosis	0	0
others	12	8.28[b]

[a,b]Values in the same column with the same superscript are not different at 5% level of significance; n = number of respondents.

strategies in livestock activities (Schwalbach et al., 2001). Cattle breeders with no formal education (40.25%) as observed in this study, were more than those reported in the Guinean peri-urban zone (Somda et al., 2004), and less than the 77% observed in South-west of Nigeria (Adesehinwa et al., 2004). However, those with primary, secondary and high school education backgrounds were respectively 42.75, 13.85 and 3.14% which were higher than 4.6, 1.1 and 2.3% reported among dairy production farmers of the peri-urban zone in Guinea (Schwalbach et al., 2001). In Turkey (Orhan et al., 2010), the majority of men had either primary or secondary school education background. All the farmers were men, compared to what was reported in Tanzania (Ngowi et al., 2008) where 21% of households were women-headed and in South-western Nigeria where 30% of ruminant livestock farmers were women (Adesehinwa et al., 2004).

Many cattle breeders (60%) in this study were young (26 to 45 years old) compared to the average age of 58 years reported in the Guinean peri-urban zone (Somda et al., 2004).

While wealth and social (43.80%) and financial (43.10%) were the main reasons for cattle keeping in this study, rates of 9% for prestige and bridal dowry and 91% for cash-related reasons were reported in small-scale cattle farming systems in the North-west Province of South Africa (Schwalbach et al., 2001). The observed differences with our study results from cash-related reasons included 46% of cash as the main reason, 17% of cash for emergencies and 28% for financial security. The 9% are shared as 5 and 4%, respectively for prestige and bridal dowry.

Most of the tasks were performed by laborers. However, herd's owners and their children were mostly involved in health care, feeding and grazing activities. This has previously been reported in the peri-urban zone of Ngaoundere. Also, herd size range in this study was in agreement with the earlier findings in the region (Mingoas et al., 2006), while the observed male:female ratio differed from those in South Africa (Schwalbach et al., 2001), where females constituted the largest group in herds.

The higher *Gudali* zebu representation in the present study confirmed earlier reports (IRZ/GTZ, 1989), which stated that the breed was raised by more than 82% of

the livestock farmers.

Also, Olson (2005) reported that many range management practices, especially supplementation could have positive or negative effects on cattle nutrition and reproduction. A large number of farmers (more than 98%) carried out supplementation in the study region. This percentage was greater than 31% in Nigeria ((Adesehinwa et al., 2004). Somda et al., 2004) and 7 to 70% depending on the type of farm and animals in the Guinean peri-urban dairy farms. In the present study, agro-industrial by-products such as cotton seed cake and corn brand in Guinea were used as supplements. The low percentage obtained in South-western Nigeria ((Adesehinwa et al., 2004).) could be due to the availability of fresh grasses for most of the year.

Many farmers who were less educated provided supplements to their animals compared to few who were more educated. The tendency was reported among farmers in the Adamawa region of Cameroon on the use of agro-industrial by-products, such as cotton seed cake (Deffo et al., 2009).

Supplementation frequency of 1 to 2 times per week was significantly performed and agrees with earlier findings reported in the Adamawa region (Pellequer, 2008).

Natural mating (87.4%) was the commonest system. A rate of 91.1% was reported in the peri-urban region of Khartoum North Province (Elniema et al., 2011). The average age at mating (2 to 3 years) recorded in this study was less than the 3 to 5 years observed (Somda et al., 2004). The differences could be due to the aims of livestock breeders. In fact, the main reason of cattle breeding in the study region was meat production, compared to that of the peri-urban zone in Guinea where milk production was the major reason.

Also, in Tanzania (Ngowi et al., 2008), natural or free mating was the breeding method mostly used by farmers.

Trypanosomosis was recognized by farmers as the main disease interfering in cattle reproduction. In the neighboring Faro and Deo division, the disease has been reported as the most frequent and lethal disease of cattle (Mbahin et al., 2006) and the second most common disease described by cattle owners in some parts of Kenya (Machila et al., 2003).

Foot and mouth disease was the second most common disease affecting cattle reproduction, and has been previously identified as the 5th important disease by livestock owners elsewhere (Mbahin et al., 2006).

Conclusion

Peulh and *Mbororos* ethnic groups are well known for cattle breeding. In this study, an increasing interest of other ethnic groups in cattle breeding in the region has been observed. Livestock breeders were younger and literate, and this could be a great asset to planning and implementation of development strategies in livestock activities. Wealth and cash-related ventures were the main objectives among cattle farmers. Various supplementation practices observed in herds management can be suitable and have positive effects on cattle nutrition and reproduction.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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