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Cattle Rearing Systems in the North West Region of Cameroon: Historical Trends on Changing Techniques and Strategies

Aloysius Nyuymengka Ngalim

Department of History, University of Buea Cameroon, P.O.Box 63,
South West Region, Cameroon
angalim2001@yahoo.co.uk

Abstract
This study examines the diagnosis on the evolutional process inherent in the grazing of cattle in the North West Region of Cameroon since its introduction. To realise this objective, three variants of extensive cattle grazing methods and zero grazing, the only intensive exploitation system are examined. The focus is to situate changes in pastoral nomadism in wider conceptual and historical contexts by examining the relationship between the innovations in cattle rearing methods, resource use practices and the changing economic use of cattle. Fundamentally, the contours of grazing transformation in the cattle production systems reveal that exogenous techniques and strategies different from that of the herder's social, economic and traditional logic were asymmetric to the locale and difficult to accommodate at the beginning. In more recent times, the process of transformation gained momentum, signalling the adoption and adaptation of new and external grazing techniques. These "qualitative" changes were largely induced by government, state bureaucrats, Nongovernmental Organisations, merchant class and wealthy townsmen who invade the pastoral range. This is because for generations, the cattle sub-sector in Cameroon, plays a significant role in its economy and society. Cattle was wealth especially to the Fulani that dominate the sector, generated employment, provided nutritional products, source of revenue and continued to produce animals to finance socio-ceremonial activities.

Keywords: Cattle Grazing Methods, Innovations, Adoption and Adaptation, Significant Role

Introduction

The livestock sector globally is highly dynamic. In developing countries, it is evolving in response to rapidly increasing demand for livestock products. Historical changes in the demand for livestock products particularly beef have been largely driven by human population growth, income growth and urbanization. Also, the production response in different livestock systems has been associated with science and technology as well as increases in animal numbers. The livestock sub-sector in Cameroon, plays a significant role in its economy. Generally it is the source of revenue. It serves about 30% of Cameroon's rural population, representing 9% of agricultural productions and contributes some 125 billion FCFA to the Gross Domestic Product (Aliou, 2004:11). The role of livestock, in ameliorating the nutritional status of the Cameroonian population cannot be over-

emphasized. Furthermore, it generates employment opportunities to millions of Cameroonians, like breeders, middlemen in cattle trade, transformers, transporters and butchers. Livestock products, especially cattle beef constitute a significant part of the main diet of more than 60% of the population.[1] Other products like milk, hides and skin are also highly consumed in some parts of the country, especially in the North West (N.W.) and Northern Regions (Aliou, 2004). Livestock products, especially dairy, make unique contribution to human nutrition by providing micronutrients in bio-available form such as vitamin A, in addition to carbohydrates, protein and calcium.

In Cameroon, human population is expected to grow by more than 50% by the year 2030 (Aliou, 2004:3). Thus the challenge for the livestock enterprise is to produce food for the growing population using no extra land. To meet up with the consumption rate, it requires developing a viable livestock industry, reliable institutions and production methods to harness the potentials of animal endowments. In 1960, Cameroon had about 1,750 heads of horned cattle. By 1983/1984, the number was 4,040 heads and in 2003, the number had increased to about 5.6 million cows (National Committee of Agro-Pastoral Show Bamenda, 1984:66; MINEPIA, 2000:12). In 2007, it rose to over 5.9 million heads and beef production moved from 512,000 tons in 1995 to 650,000 tons in 2006. The cattle population in 2008 stood at 7 million heads. Over 90% of the estimated cattle number was found in four Regions, the Far North, the North, the Adamaoua and the N.W. Regions (Republic of Cameroon, n.d). According to 2006 statistics as presented in table 1, the total number of cattle in the N. W. Region amounted to 425,062 with Donga-Mantung Division having the highest cattle population of 129,754 followed by Menchum Division with a total of 62,920 and Ngoketunjia with only 6,649 (see table 1) (Republic of Cameroon, n.d).

Table1: Grazing Land, Number of Graziers and Cattle Numbers in the N. W. Region by Division, 2005

Division	Grazing Land (ha)	Grazing Land (ha) Invaded by Bracken Fern	N0. of Grazers	N0. of Cattle
Boyo	24,773	30230	582	43,661
Bui	66,500	45,100	1143	56,010
Donga-Mantung	115,963	51,980	1717	129,754
Menchcum	144,120	39,345	784	62920
Mezam	37,431	478	2,988	26,937
Momo	105,610	44,179	515	14,745
Ngokctunjia	932	300	274	6,649

[1] The Mbororo Fulani dominated cattle rearing and this amounted to their lifeline. To the Mbororo Fulani, the honour and prestige of a family was a function of the number of cattle the family owned. Cattle functioned as a status symbol derived from society's appreciation of their economic worth. Wealth has been measured mainly in terms of number of herds rather than their monetary value.

Total	**495,329**	**211,612**	**8,003**	**340,676**

Source: GP-DERUDEP- Baseline study of the North West Region, SIRDEP; Nov. 2006.

The Presentation of the N. W. Region

The area of study, the N. W. Region of Cameroon lies between latitudes 5˚ 45' and 9˚ 9' N longitudes 9 ˚13' and 11˚ 13'E. It covers an area of about 17400 km² and it is bordered in the North and West by the Republic of Nigeria, in the South by the West and South West Regions and in the East by the Adamawa Region. Administratively the North West Region is divided into seven Divisions namely: Boyo, Bui, Donga Mantung, Menchum, Mezam, Momo and Ngoketunjia respectively with the following administrative capitals: Fundong, Kumbo, Nkambe, Wum, Bamenda, Mbengwi and Ndop. Bamenda is the headquarters of the North West Region (Manu, 2014:182).

The vegetation is savannah. In the lower transitional zone and low altitude areas savannah is covered with wood, shrubs and lower mountain forests mostly along the rivers. In the highland zone, we have grassland vegetation that is derived from mountainous forests. The Region falls within the typical savannah zone covered predominantly with grass but around plains such as the Mbembe, Fura Awa and Widikum areas, the vegetation is predominantly forest (Manu, 2014:182)). The topography of the Region varies greatly from depressions lower than 400m to high mountains 3000m above sea level. This topography can be classified into three main zones: the lower altitude (<900m); the mid altitude (900-1500m) and the high altitude (1500m). The climate is greatly influenced by the topography; it is described as a tropical transitional climate from the rainy humid and continuously warm climate in the South to the extremely changeable (in terms of rainfall and temperature) but relatively dry and hot climate of the North. The high mountainous areas are cold (<15℃) such as Ndu and Nkambe whereas the low altitude zones are hot (average 27℃) such as Ndop plain and Ako Sub Division. There are two distinct seasons: The rainy season (March/April-Oct/Nov) and the dry season (mid-October to mid-March) (Manu, 2014:182). With this climate, topography and vegetation, the N. W. Region is an excellent zone for animal husbandry.

The Region was and is actively involved in beef production. Approximately 60% of the North West Region is viable for livestock production. This represents a potential of 1,054,914 hectares of natural pastures which is distributed among the different divisions in table 2. Its agro-climatic conditions are favourable for cattle rearing and that explains why the Region is one of the most important cattle production areas in Cameroon.

Table 2: The Distribution of Pasture Land by Division for the North West Region, 2000

Division	**Available Pasture Land (ha)**	**% of Pasture by Division**	**Available Pasture (ha/animal)**	
			1980	**1990**
Mezam	105667	7.2	1.5	1.2
Momo	124200	11.7	3.9	4.1
Menchum	415333	37.2	3.6	2.8
Bui	108000	17.2	1.7	1.5

Donga Mantung	305714	26.7	2.3	2.5
Total	1054914	100	2.3(Average)	1.44 (Average)

Source: MINPAT/Projet PNUD-OPS, 2000

Historical Trends of Cattle Rearing Systems, Changing Techniques and Strategies

In the N. W. Region, there exist the extensive, semi-intensive and intensive types of cattle grazing systems. A lot of the extensive cattle production was practiced in Donga Mantung, Menchum, Bui, Boyo, Momo and Mezam Divisions. The Ndop plain in Ngoketunjia Division serves as an important transhumance zone for the cattle population from neighbouring Divisions and the West Region. Pure pastoralism, agro-pastoralism and ranching to be discussed below, were the three variants of extensive rearing and zero grazing, the only intensive exploitation systems predominant in the N.W. Region of Cameroon. In discussing cattle production systems, much of the failure by specialists to comprehend the subtleties of innovations in the cattle grazing strategies was based on the incompleteness of historical information on its differential patterns of change. This paper attempts to theorise systematically the nature and results of the transformations.

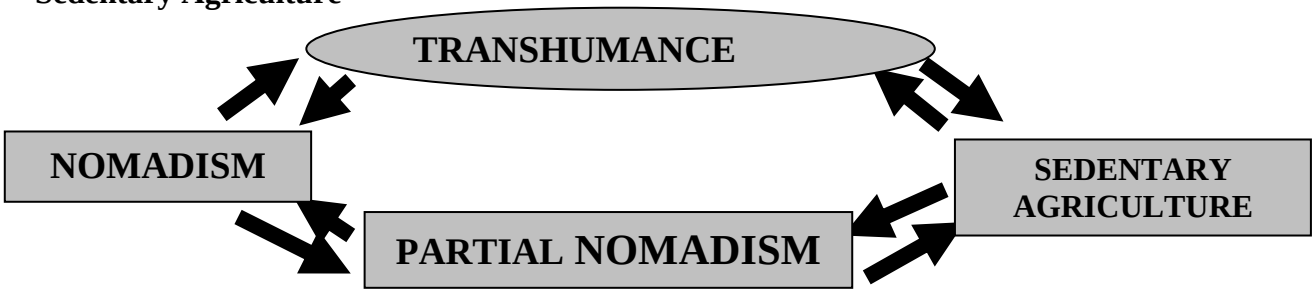
Extensive Grazing

After independence, traditional grazing dominated and still does, in the N.W. Region of Cameroon. More than 95% Mbororo Fulani practise extensive grazing. Traditional grazing was purely extensive herding with little inputs from the graziers and included all systems in which the movements of herds and men were major components; a practice known commonly as pastoralism. In other words, mobility was and is still the basic strategy in traditional grazing. It is a flexible adaptive reaction to variability in climatic conditions. Pastoralism is categorised by the degree of movement; that is, from nomadic through transhumance to agropastoral. C. Frantz defines pastoralism as a lifestyle incorporating reliance on domesticated animals for a major portion of subsistence (Frantz, 1981:62-184). W.J.A. Payne found it difficult to frame the definition of pastoralism in simplistic terms. What he observed was instructive:

> …there is a continuum between pastoral nomadism, in which livestock-owing people practice no settled agriculture, and sedentary cultivation in which people practice livestock raising (Payne, 1990:258).

In a very simplified form, this situation is shown diagrammatically in figure 1.

FIG 1: A Diagrammatic Representation of the Continuum Between Pastoralism and Sedentary Agriculture



Source: Modified from Payne, W.J.A., *An Introduction to Animal Husbandry in the Tropics*. England: Longman Group UK Limited, 1990, p.258.

Nomadism in the N.W. Region has decreased significantly except for areas such as Menchum and Donga Mantung Divisions where the Akus were found in relatively large numbers. Most of them were exclusively pastoralist who depended simply on the sale of cattle and their products to obtain foodstuff. Their movements were usually opportunistic and followed pasture resources in a pattern that varied from year to year. This type of nomadism reflected, almost directly, the availability of forage resources. The patchier pasture resources were, the more an individual herder moved in an irregular pattern. Such opportunistic movements came as a result of rainfall variability or other episodic events, such as rangeland fire or the outbreak of disease. This system was fundamentally event-driven. This uncertainty amongst the Akus led to the precautionary principle as they reacted rapidly to changes in the ecology and the climatic environment of the rangeland they utilised. Because of the hardship involved, wastage of resources and time, nomadism has gradually been on the decrease. By the 1970s, nomadic pastoralism had reduced enormously.[2]

As earlier as the colonial period, the prevalent system of rearing in the N.W. Region was transhumance and even to date, about 80% of the Mbororo Fulani practise it.[3] Cattle were managed on communal grazing areas from January until the end of December of every year. After vaccination, a regional order from the Regional Delegate of MINEPIA moved cattle to the transhumance grazing lands. This is a periodic movement of cattle and graziers from their permanent homes on hill summits down to the plains in search of greener pastures. As hinted earlier, insuffiency of available forage and water resources was the most frequent causes, but there were others such as swarming of insects and parasites like tse tse fly, the vector of trypanosonomiasis, temporal occupation of the land by crops and rivers, higher calving rates because of greater feed and water in transhumance areas. A characteristic feature of transhumance was herd splitting. The herders took most cattle for grazing, but left the resident community with a nucleus of lactating females, sick and adult cattle and calves.

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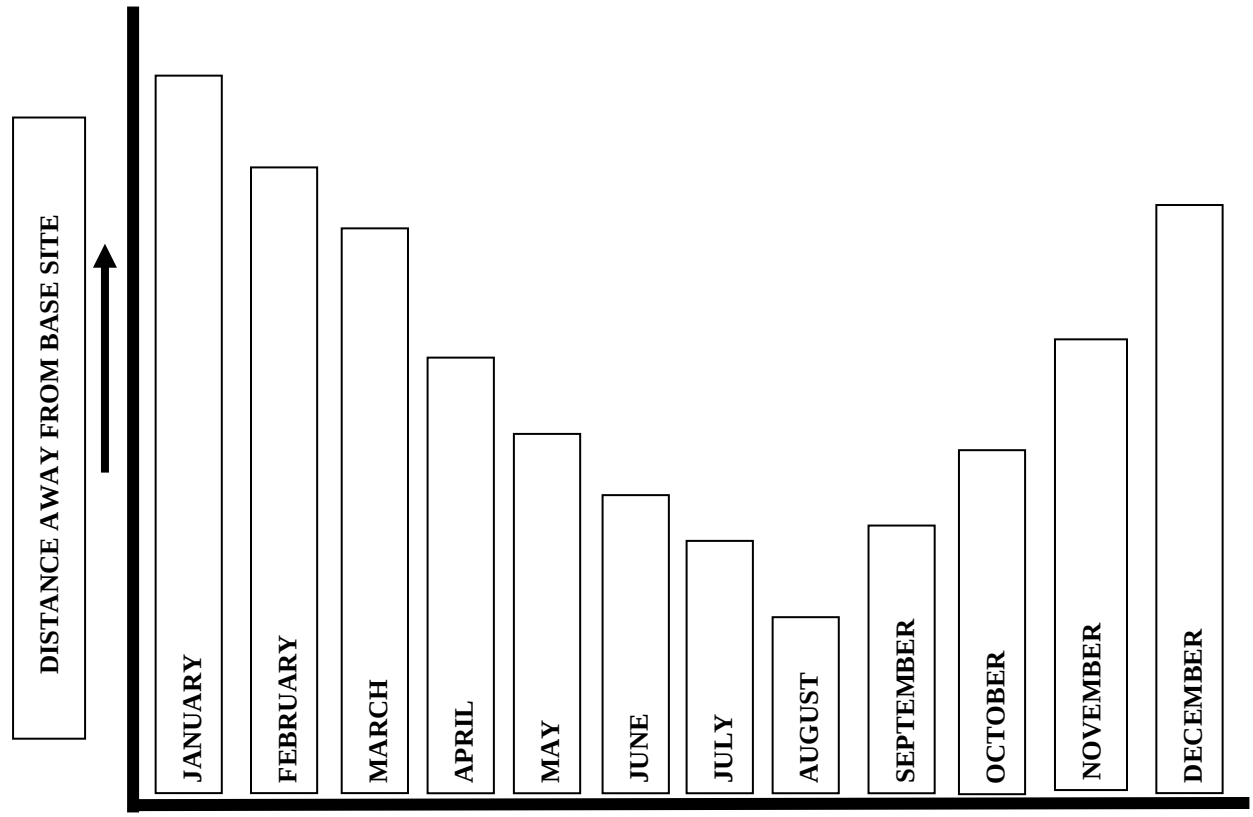
[2] Dunni Jeidoh, 35, Social Worker/Coordinator -Adult Literacy- MBOSCUDA, N.W.P., Kumbo, November 17, 2004.

[3] Transhumance is a phenomenon characteristic of the extensive production system and regularly practiced within the Region according to the Law on transhumance. This is mostly practiced by the nomadic herdsmen (Mbororo) who move with their cattle for more than 50 km in search of pastures especially during the dry season. However, they are subject to carved out transhumance zones and passages. The transhumance movements are regulated by the Presidential Decree No. 76/420 of the 1976, regulating the movement and exploitation of livestock in the country. This decree modified by decree No. 86/755 of the 1986 includes the provisions of transhumance activities: i) circulation of cattle movement from one Region to another for transhumance, needs an authorization from the Minister of MINEPIA; ii) cattle movement from one division to another needs an authorization from the Regional Delegates of livestock & fisheries; and iii) cattle movement from one sub-division to another needs an authorization from Divisional Delegates.

The transhumance period in the N.W Region lasted for about three and a half months (January to April). Sometimes, only part of the family and the herd moved out for the dry season grazing. That is, to the low lands known in *Fufulde* as *Fadama* and returned to the highlands when it rained. Figure 2 below attempts an illustration of a transhumance calendar in the N.W. Region.[4]

FIG 2: Extensive Daily Grazing Distance of Cattle Away from Base site from January to December.



Source: Field Survey, 2003.

Figure 2 presents the grazing travel distance (GTD) of cattle from January to December. From January to August, the GTD decreases whereas from August to December, it increases away from the base site. The highest GTD is obtained from January to April. This could be ascribed to forage scarcity which resulted in cattle covering long distances in search of feed. The Lowest GTD is obtained in August. Also between July and October it is low probably due to availability of forage evident during the rainy season. Besides, the grazing paths could

[4] In almost all the *Fadama*, the main grass species for fodder were (*Andropogon gayonus and Penisetum purpureum*).

be bushy, and water logged thus creating difficulty in the movement of cattle and their herdsmen.

As far back as the 1960s transhumance areas were carved out. Table 3 presents the typology of dry season pastures in the low altitude zones. Above an elevation of 1000 meters, the high lava plateau is free of the tse-tse fly and areas above this altitude constitute the wet season grazing lands. Below the 1000m altitude the dry season range sites are infested with tse-tse fly. During the dry season about 161.600 cattle descend to the lower elevations and 299,000 cattle remain in the uplands on permanent grazing sites (Neba, 2007).

Table 3: Typology of Dry Season Range Sites in the North West Region of Cameroon

Morphologic Unit	Topographic Site	Number of Cattle
Plains	*Mbwa (Ngu, Sabongari, Mbawso) *Mfumte (Mayo Binka) *Misaje (Dumbo) *Ndop	30,000 7,000 40,000 25,000
River Valleys	*Bui (Lip) *Katsina Ala (Lower Fungom) *Kumbi (Ijim in Kom) * KImbi (Njinikimbi in Wum) *Upper Menchum (Mankon-Bali) * Upper Menchum (Mbengwi-Munduni) *Menchum Valley (Bafut) *Mentar (Buh)	4.000 3,000 9,000 9,000 9,000 7,000 7,000 4,000 2500
Edaphic Units	*Baligham *Noni *Lake Nyos Basin	3,000 1,900 2,00
TOTAL		161600

Source: Neba, N.E. (2007). "The Implication of Transhumance on Cattle Herder-Crop Farmer Relationship: Addressing the Problem of Conflicting Land Use Systems in North West Province, Cameroon, *South South Journal of Culture and Development* Vol. 9(2).

During the transhumance period, each cattle herd was under the charge of a *gaynaako.*[5] Apart from the service of a *gaynaako*, management was borne by the family as illustrated in Table 4 The table shows the allocation of labour in a grazier's household.

[5] Herdsman in *Fulfulde*.

Table 4: Division of Roles in Grazier Households

ACTIVITY	MALE		FEMALE	
	YOUNG	ADULT	YOUNG	ADULT
Free Range Grazing and Watering	***	***	*	*
Transhumance	***	***	-	-
Milking	*		**	***
Health Care and De-ticking	***	***		
Salting	***	***	-	-
Bush Burning	***	**		*

Source: Field Data, 2003
Key: ***=Highly involved, **=Involved, *=Averagely involved

Transhumance was and is still plagued by several problems. Some of the constraints in the cyclical movements were a lot of energy spent. Other negative consequences (i.e. incidences) witnessed during transhumance include:

- High death rate of calves due to hunger, pests, diseases and stress.
- High transmission rate of animal pests and diseases.
- Farmer/grazier conflicts.
- Children drop out of school to become herds' men.
- Increased bush fires by graziers to fight unpalatable species and improve pasture.
- Overgrazing, precipitation of erosion and destruction of eco-niches
- Cross border infections of humans and animals.
- High rate of cattle theft.

Though a majority of the cattle rearing population of the N.W. Region still practice this system of production, the production system is gradually giving way to alternative methods of cattle rearing as innovative ideas streamed into the Region. From about 1972-2013, pastoralists such as Abdulahi Mumini Muda,[6] Ahmadou Manu,[7] Hamawahi Buba Sidiki,[8] Alhadji Zakari Mame,[9] Kadiri Manjo,[10] Bongnda Christopher Wawa[11] to mention a few increasingly became involved in crop cultivation (agropastoralists). Agropastoralists are part of the continuum between pastoral nomadism and settled agriculture. Under this system, cattle and crops coexist, with cattle as their main source of livelihood. In the N.W. Region, the association of cattle and land cultivation was at various stages all of which added to overall agricultural production by way of work animals and valuable manure. In western Nigeria, oxen traction was an attractive investment only when farmers grew cash crops and when sufficient capital was available. In the N.W. Region, cattle traction was spotted and quite insignificant in most areas. Factors such as short growing season, low soil fertility and

[6] Abdulahi Mumini Muda, 32 *Alkali*, Nkambe, November 3, 2004.
[7] Ahmadou Manu, 34, Grazier/Cattle Trader, Takija-Kumbo, November 5, 2004.
[8] Hamawahi Buba Sidiki, 37, Grazier/Cattle Trader, Takija-Kumbo, November 5, 2004.
[9] Alhadji Zakari Mame, 71, Grazier, Cattle Trader/Farmer, Bamenda (Mendankwe), December 2, 2004.
[10] Kadiri Manjo, C.48, Grazier, Tadu, November 11, 2004.
[11] Bongnda Christopher Wawa, 52, Technician of Animal Industries, Nkambe, November 1, 2004.

limited range of cultivable crops limited the use of animal traction. The performance of these integrated systems hinged on the management of crop residues and manure, represented the main source of organic matter and nutrients for animals and the soil.

The Promotion of Adaptive Farming System Based on Animal Traction, popularly known by its french acronym PAFSAT, was introduced into the N.W. Region in 1980.[12] This was a protocol agreement with the German government. PAFSAT introduced productive farming techniques with emphasis on the improvement and maintenance of soil fertility by peasants and rural farmers who could not afford expensive technology.[13] The activities of PAFSAT eased the labour constraints on farmers and improved their yields. But, like the Wum Area Development Authority (WADA), and because of the economic crisis of the 1980s, it died off and left the poor farmers abandoned just when they needed its services most. PAFSAT was initially put under WADA until 1989 when it was transferred to the North West Development Authority -MIDENO. However, the activities of MIDENO were soon to ebb away due to financial mismanagement. Amid its manifold objectives, PAFSAT aimed at promoting a "Permanent Farming System" (PFS) adapted to the environment and based on animal traction.

Cattle drawn cultivation was encouraged in Menchum, especially in the 1980s by WADA. The WADA animal programme trained both oxen and farmers for crop cultivation. The cattle could be used to plough, harrow, ridge, mark, weed, mulch, as a source of manure, hired to other farmers, and used to transport produce. This was the Oxen Training and Farming Programme (OTFP). The sectors where the OTFP were strongest were Bum, Menchum centre and Yemngeh (Chia, 1988:48). Table 4 shows the OTFP trained farmers and oxen in the 1980s, and Figure 3 land ploughed and harrowed by oxen in WADA. To an extent, oxen farming was carried out in Mbaw Nsaw and Lassin areas of Bui division and still exist to date.[14]

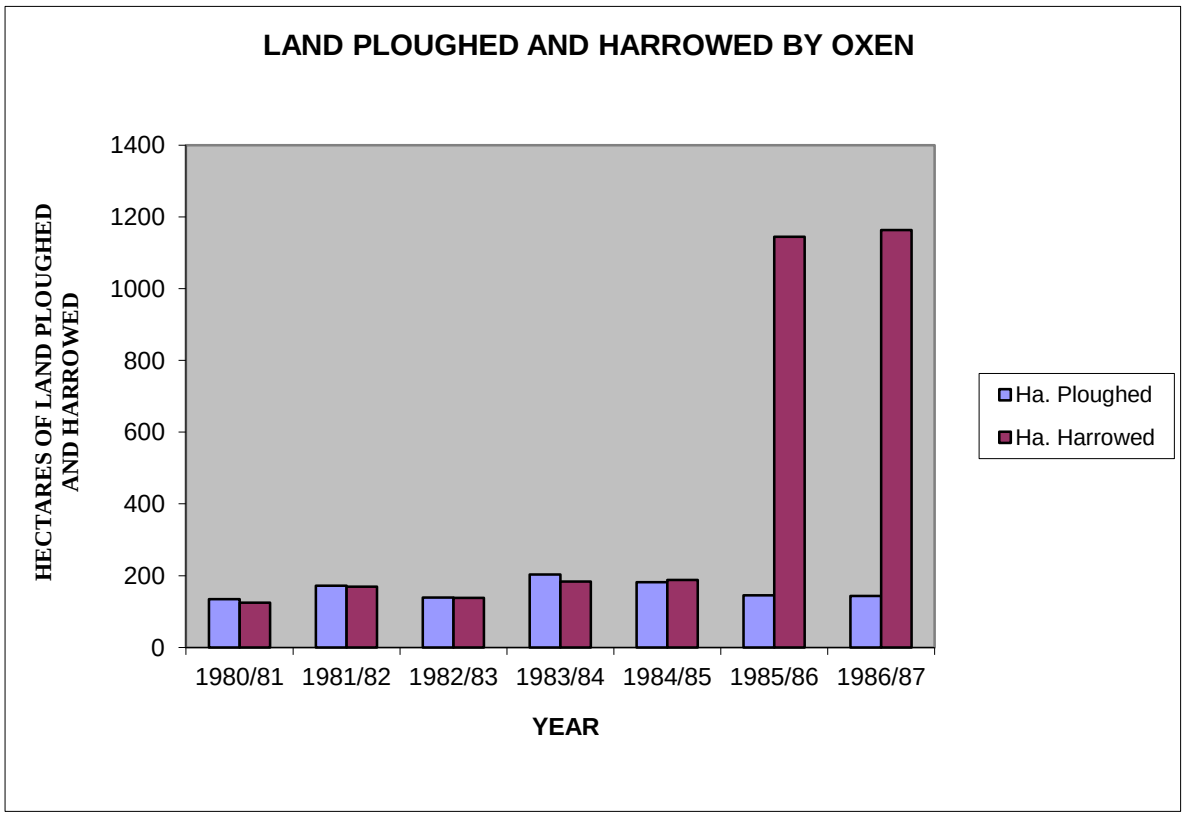
[12] PAFSAT was created under a protocol sponsorship of the governments of Cameroon and then West Germany.
[13] This entailed the utilisation of animal traction
[14] Temboh Andrew Ndayah, 33, MINEPIA Divisional Delegate, Bui, November 6, 2004.

Table 4: Trained Farmers and Oxen in the OTFP From 1980 to 1987 in Menchum Under WADA

Year	No. of Farmers and Oxen Per Sector											
	Bum		Menchum Valley		Menchum Centre		Kom		Yemngeh		Total	
	Farmers	Oxen	Farmers	Oxen	Farmers	Oxen	Farmers	Oxen	Farmers	Oxen	Farmers	Oxen
1980/81	41	58	-	-	25	32	-	-	13	13	**79**	**103**
1981/82	47	94	-	-	26	52	-	-	21	42	**94**	**188**
1982/83	45	90	-	-	25	50	-	-	20	40	**90**	**180**
1983/84	58	116	-	-	40	80	-	-	28	56	**126**	**252**
1984/85	50	89	-	-	30	55	-	-	18	31	**98**	**175**
1985/86	61	89	1	2	29	54	1	2	17	28	**109**	**175**
1986/87	35	52	6	10	26	50	22	38	20	24	**109**	**174**
TOTAL	**337**	**588**	**7**	**12**	**201**	**373**	**23**	**40**	**137**	**234**	**705**	**1247**

Source: Adapted from WADA Annual Reports, 1980/81-1986/87

Fig 3: Land Ploughed and Harrowed by Oxen in WADAfrom 1980 to 1987



Source: WADA Annual Reports, 1980/81-1986/87

Night paddocking was another ubiquitous activity in the region. Paddocking was adopted through controlled grazing particularly on Ijim plateau where graziers limited grazing in certain areas so as to have standing hay in the dry season. A few graziers fenced off Kikuyu grass and allowed it to grow for the last three months of the rainy season. These paddocks were opened for daily short period grazing during the dry season, especially milking cows. Paddocking was and is still vibrant around the Tubah upland region (Sabga and Kedjom-Ketingoh) (MINEPIA, 1999/2000). This was a local initiative by vegetable growers in about 1993 (Kedjom-Ketingoh Union of Farming Group). They were advised by extension workers from *Cercle International Pour la Promotion de la Création* (CIPCRE) to use cow-dung manure. Kedjom-Ketingoh farmers request graziers to provide cattle to manure land and they get paid for this service. Vegetables such as Huckleberry *(Solanum nigrum.),* Onion *(Allium cepa),* Cabbage *(Brassica spp.),* and leeks *(Allium porrum) are* grown to date. More than 60% of huckleberry in the N.W. Region was cultivated in Kedjom-Ketingoh in Babanki. They supplied national markets like Bamenda, Douala and Yaoundé.[15] As from the late 1980s, the intensification in dung application to gardens and farms was practised in St. Augustine's College, Nso of Bui Division. Also, workers of the Jakiri Station of the Dumbo ranch cultivated a lot of huckleberry using cow dung.

[15] Dunni Jeidoh, 35, Social Worker/Coordinator -Adult Literacy- MBOSCUDA, N.W.P., Kumbo, November 17, 2004.

Another system of extensive cattle production in the North West Region is ranching. W.J.A. Payne posits that ranching is an alternative to the various types of nomadism and transhumance. To him,

> the technical objectives of ranch management are; to maintain and if possible improve the grazing, to decrease annual fluctuations in cattle numbers and seasonal fluctuations in live weight, maximise reproductive performance and minimize mortality. All these managerial practices tend to intensify production (Payne, 1990:274).

According to Pagot (1992), ranching is a method of open-air livestock rearing, relying on the exclusive exploitation of pastures, which are usually natural, in a system calling upon the minimum use of manpower. Guarding of the herd is replaced by the use of enclosures. The herds are subjected to the minimum of operations of marking, castration, and the selection of cattle for butchering. What F.A. Goodliffe the then Acting Resident, Bamenda Region observed of ranching was instructive:

> By 1951, there was no doubt that the development and economic progress of the Bamenda Region was bound up entirely with the proper and the efficient rearing of cattle on modern and scientific lines. It was realised that with the long standing and conservative methods of the Fulani cattle-owners they could not obtain either from the cattle or from land itself possible results. With the aim, therefore, of demonstrating to the Fulani, and to the indigenous people of this Region, how to obtain the greatest profit from cattle and how to utilise land to the best advantage, there was need for a ranch (National Archives Buea, 1942:160).

It was not until 1974 that the dream of a government ranch became operational with the creation of *Société de Développement des Produits Animales* (SODEPA). SODEPA was a parastatal charged with government ranching schemes in the N.W. Region. On the 8th March 1974, it was created with the hope of improving beef production using modern methods. This was aimed at providing a steady supply of good quality beef throughout the country in order to improve on the standards of living of Cameroonians. Perhaps this was reacting to the 1969/70 meat deficit. It was estimated that by 1985, cattle deficit would be 4.5 times the 1969/70 deficits (Ngaoundere Grand Agriculture Show, 1974). In 1988, cattle population was about 10,000 and 500 for Dumbo and Jakiri stations respectively (MINEPIA, 1987/88:35). The total cattle population stood at 7007 in June 1998, 6995 in June 1999, 6784 in June 2000, 6553 in June 2001 and 6329 in March 2002 (Ngeh, 2002:2). Another objective of SODEPA was to enable the local breeders to copy its example so as to increase the national herd by reducing cattle mortalities. Besides the government-owned ranches of Dumbo and Jakiri, a number of aspiring graziers as far back as the 1980s created ranches in the hope of improving on cattle production. Some of these include individuals or groups ranches.[16]

[16] Ni John Fru Ndi Ranch in Wum, Menchum, Ndawara Ranch of Alhadji Baba Amadou, Esu Ranch annex of Ndawara, Bingo C.B.C Ranch, Rural Training Center Mfonta, Mbengwi Cistercian Monastry, Njinikon Catholic Mission, Shisong Catholic Mission, St. Augustine's College Nso, WADA, Tadeng Muna's Ranch, John Ngu Foncha's Ranch, Fon Anwgafor's Ranch etc.

The Rotational Grazing

In the ranching grazing system discussed above, the exploitation of pasture was improved by the practise of pasture rotation. Rotational grazing of dairy cattle was common practise at the Institute of Animal Research (IAR) Bambui. Pastures were made of *Brachiaria ruziziensis*, Kikuyu grass and stylosanthes. This technique reduced the time spent by the herd on a given plot. The plot was allowed for a rest period during which other plots were grazed one after the other. This technique gave time for the nutritious and palatable species sought by animals to recover and to reconstitute their reserve. In the early 2000s, Akah Munaba from Mbengwi had a cattle population of about 220 and 10 paddocks. He did not go into the practise of transhumance because he had an upgraded pasture made up of natural pasture, *Brachiaria ruziziensis* and *Guatemala*. Cattle grazed from one paddock to the next. This was also true of the Institute for Agricultural Research Development (IRAD) Bambui with 42 paddocks.[17]

Semi-intensive grazing/Zero grazing

In the past, the practise of intensive cattle fattening was not taken serious, the reason being the high cost of feed, high fixed overhead costs and lack of technological skills. Management of intensive production systems required the availability of suitable technology, together with back-up agricultural policies with regard to land tenure, taxation, credit and trade policies (Payne, 1988:142-143). In the N.W. Region of Cameroon some degree of expertise, in cattle health, feeding and management of improved pastures was needed. However, semi-intensive systems were gradually grafted into the cattle production systems. This may be considered as a period of confinement combined with limited periods of grazing. Semi-intensive grazing systems of beef production were and are spotted over the region. Heifer Project International (HPI) was one of the pioneering NGOs involved in the introduction of semi-intensive and zero grazing dairy production strategies in Cameroon. Working jointly with the IAR, HPI began distributing crossbred dairy cows to smaller farmers in 1978. By 1981, a semi-intensive dairy production system based on crossbred cattle was introduced in the Region. More emphasis was placed on zero grazing dairy production using purebred Holstein and Friesian cattle aimed at achieving high milk production levels in 1994.

Zero grazing is the intensive system by which animals are not allowed to graze, but their feeds are brought to them in an enclosed structure. In the N.W. Region, HPI dairy cows were maintained under zero grazing. Fresh forage was cut, chopped and fed to cattle three times a day at 8am, 12 noon and 5pm. About 30-50kg of chopped forage was served during 24 hours. Legumes such as Desmodium, Leucaena and Calliandra were given to cattle once every fortnight. Concentrate supplements were prepared on-farm. Lactating animals were hand-milked twice a day at 6:00 am and 5:00pm. Calves were bucket-fed with milk until the age of 4 months, when they are weaned. Animals were sprayed against ticks every month and dewormed every three months. All these zero grazing inputs led to the production of healthy cattle and marked improvement on milk production both in quantity and quality.

Conclusion

In general, tropical countries have crucial resources with regard to livestock production and more particularly cattle rearing. There are still vast areas of pastureland. These areas are often difficult, if not impracticable, to envisage any enterprise other than livestock rearing. Also,

[17] Chungong Martin, 42, Animal Health Technologist, IRAD Bambui, January 24, 2005.

tropical countries have excessive rural labour force that could comfortably support the cattle sector. However, the rational exploitation of these resources is still unattainable thus productivity is still low. Whether one considers the animal or the herd as the elementary unit of production, the factors that condition their maintenance and production cannot be secluded. They are water and forage resources that depend above all on rainfall and the availability of man power. Except for intermittent difficulties, there ought to be a harmonious relationship between these factors and stock numbers.

Cattle have diverse functions for the livelihood of farmers in the mixed crop livestock systems in the N. W. Region of Cameroon and elsewhere in Africa. Cattle provide food in the form of meat and milk, and non-food items such as draft power, manure and transport services as inputs into food crop production, and fuel for cooking. Cattle are also a source of cash income through sales of the above items, animal hides and skins. Furthermore, they act as a store of wealth and determine social status within the community. Due to this important function, cattle play an important role in improving food security and alleviating poverty.

The traditions and cattle production systems in the N. W. Region are more difficult to modify than development theory usually estimates. The mastery of extensive livestock production systems is very delicate. Techniques brought from outside the system do not fit well because they are not a response to an interior social, economic or traditional logic but rather to an outside economic logic or to a social logic which is different from that of the herders. These techniques are not supported by an endogenous motivation but by an exogenous one. Extension services provided to herders are not easy to implement. If they are not carefully planned, they may appear as an attempt to substitute technicians for herders. Understanding of the rationale behind pastoral movements has advanced tremendously since the days when nomads were thought to wander aimlessly on the rangeland. The many types of criteria behind their decisions vary from year to year and household to household according to changing social and environmental circumstances, giving the pastoralists a flexibility that allows them to meet environmental challenges and subsistence needs. This very flexibility is however, often interpreted as random, inconsistent and irrational by development workers and governments. Many elements of this “traditional” system have survived into recent times, despite changes in the resource base, income demands, and political position of pastoralist populations. However, with the passage of time, cattle grazing strategies, techniques and most importantly the attitude towards livestock farming have changed to meet up with new market opportunities.

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