

## LIVESTOCK MECHANIZATION: AN OPTION BETTER THAN GRAZING LAND FOR CATTLE REARING IN NIGERIA

\*<sup>1</sup>Ale, M. O, <sup>1</sup>Akintade, A. A., and <sup>2</sup>Asolo, O. H

<sup>1</sup>Department of Agricultural and Bio-Environmental Engineering Technology

<sup>2</sup>Department of Animal Health and Production Technology

Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria

\*Correspondence author: alebosunenator@gmail.com

### ABSTRACT

Rearing of cattle in Nigeria has been causing lots of problems ranging from environmental to communal. Farms are being destroyed by the cattle in the process of moving them around by the herdsmen. To proffer solutions to these problems, establishment of grazing lands across the country was proposed by the present government. This proposal has already caused some political disagreements in the country. But the use of grazing lands for livestock production should not be encouraged in this era of advanced technology when mechanization of the sector can simultaneously be used to improve livestock production as well as averting the menace from the nomads. This paper, therefore examines the prospects of livestock mechanization as an option better than the use of grazing land in Nigeria.

**Keywords:** Cattle rearing, grazing lands, ranching, livestock mechanization, Nigeria.

### INTRODUCTION

Today, efforts at providing solutions to the problems of food security in Nigeria seems to be a one direction approach. It is one-directional in the sense that the campaign for agricultural mechanization is only in the area of crop production with little or no effort on mechanizing livestock production system in the country. For instance, the nomads still move about with their cattle searching for grasses and on the process, the cattle destroy the farms around. This unwelcome practice has been causing lots of crisis in the society. It frequently leads to communal clashes resulting to death of innocent citizens and causes lots of environmental pollution by defecating the streets in Nigerian cities (Ofuoku and Isife, 2009). If the mechanization approach has been tailored towards both crops and livestock, the livestock aspect would have been providing solutions to the aforementioned problems as well as conserving the energy used by the cattle to move about for milk production and wastes from the cattle for manure and bio-energy production.

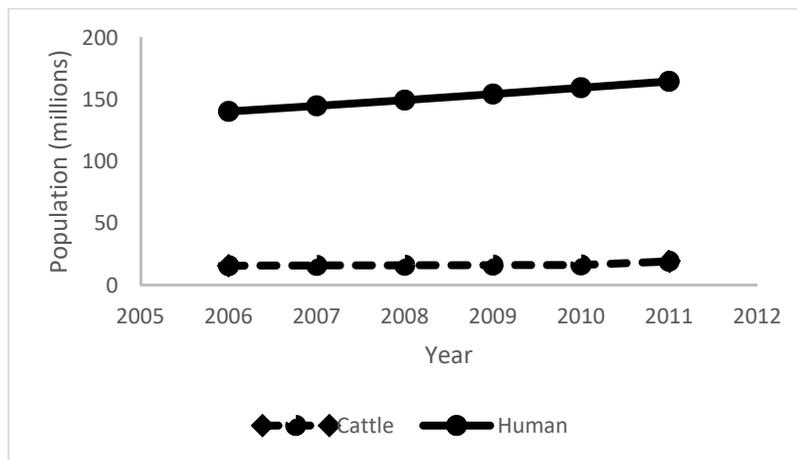
Recently, the present government proposed the establishment of grazing lands across the country instead of enactment of policies to encourage mechanization for livestock production; establishing a center for livestock mechanization or making livestock mechanization research a priority for the National Centre for Agricultural Mechanization (NCAM). The land to be acquired for grazing can be made available for youths or the landless for crop production and grazing can be substituted by the use of appropriate farmsteads and infrastructures of the latest technology for better livestock production for milk, meat and leather production in Nigeria.

### CATTLE PRODUCTION AND MANAGEMENT IN NIGERIA

Cattle are large-bodied ruminants that feed on pastures and forages or fodder (Arowolo, et al. 2013). They are mammals of the Family: *Bovidae*, Class: *Mammalia*, Genus: *Bos* and Species: *Taurus* (for exotic breeds) and *indicus* (for local breeds). Cattle rearing in Nigeria is an old occupation which is traditionally practiced by Fulanis and Shuwa Arabs in northern Nigeria with extremely few local villages in southern Nigeria (Erebor, 2003; Arowolo et al., 2013). According to Nori et al. (2005), the asset base of this tribe of Nigerians is basically on cattle production which is done by each household on a relatively lower scale of production and as a major source of livelihood. According to Sodiya (2005) and Arowolo et al. (2013), to the few who keep them, the livestock is taken as a source of security and independence through which each household member is able to meet his / her cultural obligations and assignments within the household. The trend of cattle production as compared to the human population in Nigeria reveals that no significant change in the cattle production rate compared with the geometric increase in the human population. (Figure 1.)

Nigeria as an agrarian society whose populace mainly subsists on Agriculture, her per capita agricultural productivity seems to be degenerating, particularly in the area of livestock production. Nigeria's inability to feed its ever increasing teeming population with adequate calorie and protein remains one of its greatest challenges today in spite of the fact

that it possesses vast resources in livestock development (Age, et al., 2006). In modern times, and in developed countries, cattle management or production has been mechanized and handled by large-scale commercial farmers. Even up till now, only a handful of Nigerian farmers fall within this category of mechanized cattle producer. In Nigeria, cattle are reared primarily for meat which is a veritable source of protein for humans, and for milk such as found with government-allied industries like Kano Dairy farm noted for large-scale production of Milk, Yoghurt etc. in the 80's; hides and skins; bones, hooves etc., all of which used to serve as raw materials for some agro-allied industries. Such industries serve as income and employment opportunities for the people wherever they exist (Arowolo, et al., 2013). This is now a story for the present generation as those companies had gone into extension with the advent of oil in Nigeria. Instead of using the revenue from the oil boom to improve our agriculture, agriculture was completely neglected. According to Mundi et al. (2012), cattle distribution in Nigeria is governed by the availability of suitable pasture land; territory free of tsetse flies; the traditional practice of tribes and adaptability of a breed to an environment. All these factors can be controlled with adoption of appropriate livestock mechanization system where cattle are raised in a confined environment.



**Figure 1: Comparative Trends of Cattle and Human Population in Nigeria by 2006-2011**  
Source: Analyzed from National Bureau of Statistics (2012)

**ECONOMIC IMPORTANCE OF CATTLE PRODUCTION**

A country cannot be self-sufficient or self-reliant in food production and economically viable if she cannot abundantly supply the protein requirements for her population. A healthy population makes a wealthy and economically independent nation and to be healthy, the population needs sufficient amount of protein. This protein is mainly supplied by livestock. From this perspective at least, one can see at a glance the vital position occupied by livestock in a nation's economy. Cattle, in this country, are one of the main arms of livestock production. It is therefore necessary to develop cattle rearing in a mechanized way. According to Schiere et al., (2002) and Mundi, et al. (2012), some of the importance of cattle production are as follows:

**Provision of Protein:** It has been proved experimentally that in human nutrition the major protein is derived from animals. Though fish supply more protein than cattle, the protein derived from beef cannot be compared with plant protein. The protein derived from the plant is of low biological value, hence it is very necessary that production of beef should be increased to meet the demand of protein of high biological value. If the nutritional intake or consumption of a country is low in protein, especially animal protein, that country's economy is in danger because an under-fed worker cannot achieve much, since he has no hope of good and balanced diet at the end of each day's work. Cattle supply milk for human consumption. It is on record that the present price for a tin of milk ranges from 150 Naira to 200 Naira. Some years back, the price of a tin of milk was less than 100 Naira. This is a good indication of the huge sum of money is spent annually on the importation of milk. If it were possible for Nigeria to produce enough milk for her citizens, the degree of importation would have been reduced.

**Farm Works:** Cattle can be used for work purposes, like cultivation and as a beast of burden. Fragmentation of land brought about by the land tenure system in some parts of this country has made the use of large machines on our farms almost impossible. This is because it is difficult to acquire a large area of land where machines can work on. But it is

possible for animal driven tractors to work on such small areas. It is also easier for a farmer to purchase and maintain a small animal-driven tractor than to purchase and maintain a power-driven tractor with its attendant costs. Unfortunately, the animals such as cattle are not there. The result is that agricultural production has remained very low and the cost of food is high. In the northern part of the country where there is a large expanse of land on which machines or animals can work, the problem has been the lack of both machines and the animals. Crop production can be increased by the use of not only artificial manure but animal manure. Cattle supply so much manure through their faeces and urine to meet the nutrient demands of the soil. It goes without saying that increased cattle population in the country will undoubtedly increase the supply of their manure, which in turn will be used to increase our crop production.

**Raw Materials for Industries:** Some cattle products such as hides/skin and milk can give rise to the development of agricultural industries. Such industries as leather-works industries or tanning industries will go a long way to improve the economy of a nation. The bones of the animals are good sources of minerals such as calcium, phosphorus, sodium and magnesium. These minerals are essential for the maintenance of good health. The bones are crushed for use as a bone meal in livestock feeds.

**Income to Government:** Cattle can be a source of direct income to this country. This is true because of the fact that they can be sold to other countries for cash. The money realized from the sales can be used to meet urgent demands in other sectors of the country's economy. Thus, you can see that cattle play an important role in the economy of a nation, including Nigeria.

**Bio-Energy Generation:** Like coal, biomass from livestock waste can be a cumbersome fuel source. By converting biomass into a gas, it can then be made available for a broader range of energy devices. The biogas can be cleaned and filtered to remove problem chemical compounds. The conversion of animal wastes and manure to methane/biogas can yield significant health and environmental benefits. Small-scale biogas digesters have been used throughout many developing countries, most notably China and India, but also Nepal, South Korea, Brazil, and Thailand.

## **CATTLE SYSTEM MANAGEMENT IN NIGERIA VERSUS THE MECHANIZATION SYSTEM**

Three distinct herd management systems are found in Nigeria: village husbandry, commercial farming or ranching and transhumant husbandry (FAO, 1977; Roger, 2009). The same management system is still applicable today instead of the mechanization system as applicable in the developed world like the Netherland, United State of America and some European countries.

### **Village Husbandry/ Extensive System**

According to the National Agriculture Sample Census (Federal Office of Statistics, 1977), only 0.3% of all rural households in western and south-eastern Nigeria keep cattle, with an average of four animals per household and rarely over 10. Cattle herds are generally concentrated in a few villages, with neighbouring villages owning no cattle at all. Village cattle are rarely herded, except sometimes in the savanna areas by hired Fulani herdsmen during the cropping season. The cattle generally gather together for the night in an open place in the village, though they are sometimes gathered in family compounds or put in a small hut or kraal. The animals are grazed on roadside grass, natural pasture and fallows, and they are fed household wastes and crop residues (Figure 2). No mineral salts are given. The animals are not castrated or weaned systematically and they are rarely milked (Mundi et al., 2012)

### **Commercial Farming or Ranching /Semi-Intensive System**

This sector includes commercial farms and government breeding or multiplication ranches, generally keeping Keteku or N'Dama cattle. The animals are usually herded by hired Fulani herdsmen on natural pastures, often with some dry-season supplementation with fodder or crop residues. The breeding stock is usually housed at night, and the weaning and fattening stock kept in paddocks. The animals are usually weaned, castrated and sprayed against tick-borne diseases, and the Fulani herdsmen often practice milking. The government ranches are mainly concerned with the multiplication of N'Dama cattle through the production of female breeding stock and improved bulls. The animals have generally been kept on fenced natural pastures (Figure 3), though this system is increasingly being replaced by herding. They are weaned and sprayed regularly. Mineral licks are given throughout the year, and the animals are sometimes grazed on artificial pastures or given fodder or crop residues during the dry season. Officially, they are not milked. Herd compositions vary widely on different ranches.

### Intensive System for Appropriate Livestock Mechanization

This is a system involving complete confinement of the animal and movement is restricted. All feed is carried to the animal (Figure 4). In situations where population growth and living standard result in increasing encroachment on land hitherto given to natural grassland, greater intensification is forced on all branches of beef industry. The intensive system thus becomes imperative. In all cases, it is aimed at producing high-quality beef by allowing the calf to express its full growth potential unlike the ranching and the village husbandry in which majority of the energy of the cattle is wasted on moving about searching for food and water. Adequate nutrients are provided to satisfy the requirement for efficient feed conversion and growth. This is the system used in the advanced countries for the production of dairy cattle. In West Africa, it is only used in a few experimental farms. The system is capital intensive and can only be used where the breed of cattle has a very high rate of conversion and the management is efficient enough to pay its way.

(Roger et al., 2009 and Mundi et al., 2012). The system is not wasteful in terms of land; animals grow uniformly and mature quickly; mechanization of farm operations is made possible; it is possible to keep a record of feed intake, weight gain, growth rate etc. and danger of wild animals and thieves is eliminated.



Figure 2: Extensive System of Cattle Rearing



Figure 3: Ranching/ Semi-Intensive System of Cattle Rearing



**Figure 4: Intensive System of Cattle Rearing**

### **CONFLICTS FROM CATTLE REARING IN NIGERIA**

Conflicts between farmers and nomadic cattle herders have been a common feature of economic livelihood in West Africa (Tonah, 2006). In the period before the beginning of the 20th century, the problem was mainly restricted to the savanna belts of West Africa. Cases of farmers-herders conflict widespread in Nigeria in recent times. For instance, in Densina Local Government of Adamawa State, 28 people were feared killed, about 2,500 farmers were displaced and rendered homeless in the hostility between cattle rearers and farmers in the host community in July 2005. The conflicts are a threat to peace and national stability (Ofuoku and Isife (2009). It also has implication for tribal co-existence, Nigeria being a multi-ethnic and a multi-tribal nation. The major causes of the conflicts as concluded from a research conducted by Ofuoku and Isife (2009) are disregard to host traditional authority; contamination of stream by cattle; overgrazing of fallow land; destruction of crops; sexual harassment of women by nomads; indiscriminate defecation by cattle on the roads; theft of cattle; harassment of nomads by host youths; stay cattle and indiscriminate bush burning. In order to provide a solution to end the recurring clashes among the farmers and the herdsmen, Nigerian government proposed to establish ranches across the country. But some said it was wrong for the Federal Government of Nigeria to propose to acquire people's lands for grazing reserves. (Premium Times, 2016). All these can be avoided with the adoption of livestock mechanization through the use of an intensive system of cattle rearing in which the cattle are kept in confinement. As reported by Eyitayo (2017). Nigeria was advised by U.S ambassador to Nigeria to improve the cattle rearing system by embracing the American system of raising livestock in a confinement. The statement was made to reduce as well as end the recurring clashes among farmers and herdsmen.

### **CONCLUSIONS**

This paper examines the management systems for cattle rearing in Nigeria; the conflicts among the herdsmen and the farmers and their impacts on the socio-economic development and the unity of Nigeria as a nation. It also emphasizes the adoption of livestock mechanization which enables raising livestock in a confinement. Based on the advantages of the intensive system, it is therefore concluded that the adoption of this system will simultaneously serve as a solution to the conflicts generated from rearing of cattle by the nomads; increase cattle production as well as create enabling environment for appropriate waste conversion technology in Nigeria instead of the ranching system proposed by the government.

### **REFERENCES**

- [1] Age A. I., Obinne, C.P.O and Idu, E.E. A Comparative Assessment of Livestock Extension Policy Implementation in Benue and Nassarawa States, Nigeria. Proceedings of 11<sup>th</sup> Annual Conference of AESON held from 3-6, April 2006.
- [2] Arowolo O. O. Lawal A.M and Ogundijo J.I. Grass-root Youth Involvement in Cattle Rearing Activities in Oyo State, Southwestern Nigeria. *Journal of Agricultural Extension and Rural Development*. 5(5) 2013:100-106.
- [3] Erebor O. *Comprehensive Agricultural Science for Senior Secondary Schools*. Johnson Publishers Limited, Lagos, 2003.
- [4] Eyitayor S. Improve cattle rearing system in Nigeria-US Ambassador to Nigeria. *Nigerian News*, March 2017.

- [5 ] FAO. Sahiwa Cattle: An Evaluation of Their Potential Contribution to Milk and Beef Production. FAO Corporate Document Repository, 1977.
- [6] Federal Office of Statistics. National Agriculture Sample Census of Nigeria 1974-75: Report on livestock enquiries June December 1974. Lagos, Agricultural Census Division 1977, 29p.
- [7] Mundi N.E., Ibitoye S.I. and Buswat I.S.R. Farm animal Production: Ruminant- General Agriculture (COP 621). National Open University of Nigeria, 2012. Pp 103-234.
- [8] National Bureau of Statistics. Agriculture- 2012 Annual Abstract of Statistics. The Federal Republic of Nigeria. Pp 468.
- [9] Nori M, Switzer J and Crawford A. Herding on the Brink: Towards a Global Survey of Pastoral Communities and Conflict. An occasional paper from the IUCN Commission on Environment, Economics Social, 2005. <http://www.iisd.org/publications/pub.aspx?id=705>
- [10] Ofuoku A.U and Isife B.I. Causes, effects and Resolution of Farmers-Nomadic Cattle Herders' Conflicts in Delta State, Nigeria. International Journal of Sociology and Anthropology. 1(2)2009: 047-054.
- [11] Premium Times. Herdsmen/Farmers' Clashes: Nigerian Govt. Proposes Ranches; Herdsmen Insists on Grazing Routes. May 11, 2016.
- [12] Roger B. 1999. Traditional Livestock Breeds: Geographical Distribution and Dynamics in relation to the Ecology of West Africa. Working Paper 122. Overseas Development Institute, London
- [13] Schiere J.B., Ibrahim M.N.M and vanKeuler, H. 2002. The Role of Livestock for Sustainability in Mixed Farming: Criteria and Scenario Studies under Varying Resources Allocation. Agriculture, Ecosystem and Environment. 90:139-153.
- [14] Sodiya C.I. (2005). Assessment of Agricultural Extension Availability and Needs in Agro-Pastoral Production System of Ogun state, Southwestern Nigeria. An Unpublished PhD Thesis from the Department of Agricultural Extension Rural Development, University of Ibadan.
- [15] Tonah S. (2006). Managing Farmer-Herder Conflicts in Ghana's Volta Basin. Ibadana Journal of Social Sciences 4(1): 33-45