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ORIGINAL ARTICLE

Challenges Confronting Cattle Farmers in Selected Farms in Ogun and Oyo States, Nigeria

[*1]Adewale O. Talabi, [1]Fatimah Adenike Sanni, [2]Gabriel Adebayo Adeleke, [1]Olajoju J. Awoyomi, [1]Olushola E. Adeleye.

[1]College of Veterinary Medicine, Federal University of Agriculture Abeokuta, [2]College of Agricultural Sciences, Olabisi Onabanjo University, Ayetoro, Nigeria. *Corresponding author: Email: talabiao@funaab.edu.ng; Tel No: +2348023234495

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ABSTRACT

Challenges confronting commercial cattle farms have caused the decrease in the productivity of cattle enterprises in Ogun and Oyo States, Nigeria. This study was carried out to investigate the challenges confronting cattle farmers in selected farms in Ogun and Oyo States. A semi-structured questionnaire was produced for 120 farmers which were equally distributed between the two states to gather relevant information that addressed the specific objectives of the study. The results showed that the farms in both States were characterized and grouped based on herd size, types of operation and years of operation. The herd size of 51-100 had the highest frequency (47; 39.2%) and 101-150 had the least frequency (12; 10%). Mixed farms had the highest frequency in types of operation (68, 56.7%) while dairy farms had the least (3, 2.5%). The years of operation greater than 10 years had the highest (53, 44%) while 1-5 years had the least. The farmers challenges include inadequate grazing area, disease, ectoparasitic infestation and non-availability of breeding stock among others. The levels of exposure to risk were based on the types of operation, years of operation, the state where the farm exist and herd size. The highest levels of frequency were used to determine the level of risk. In conclusion, commercial cattle farmers in Ogun and Oyo states are confronted with numerous challenges which range from inadequate grazing land, ectoparasites and diseases attack to lack of breeding stock. It is recommended that the Government of Nigeria should increase funding support to cattle farmers across the states for training on intensive management system, bio-security, water resources management, research and extension activities in the cattle production sector.

Keywords: Challenges, Cattle Production, Ogun, Oyo, Nigeria

INTRODUCTION

The livestock industry in tropical Africa consists of mainly cattle, sheep, goats, pigs and poultry. Livestock are of enormous importance in Africa, economically, for nutritional, agricultural and social purposes (Uilenberg and Boyt, 1999). Apart from providing the animal protein requirement of the nation, they contribute over 20% of the agricultural gross domestic products (GDP). Livestock provide vital products such as meat, milk, eggs, hides and skin. In addition, they provide raw materials for agro-based industries, draught power and manure for agriculture. They also provide employment for many Nigerians who engage in the production and marketing of livestock and its by-products (Talabi, 2006) with the resultant rapid growth opportunities for internal animal markets, potential for increased production of feed supplements, employment of professionals involved in disease control, increase in farmers' incomes and ultimately, contribution to reduction of poverty in the nation. FAO (2005) estimated the agricultural land of Nigeria as 722,000 km^2 which is 79.3% of the total national land mass and land under pasture as 392,000 km^2 which is 54.3% of the agricultural land mass. Increase in ruminant production is very vital in meeting the challenge of effective utilization of this abundant vegetation. Ruminants are the most efficient users of uncultivated land and crop residues which are un-edible to man; they also contribute substantially to crop production (Krishna and Mkondiwa, (2023). Cattle is one of the most resourceful and efficient ruminant as they consume mostly lower quality grasses and forages which they convert into edible meat and products

The role of cattle in Nigerian economy is important since the livestock sector accounts for 4.5% to 5.0% of the GDP, to which cattle supplies about 50% of meat needs and virtually all milk (Talabi, 2006). Nigeria had a cattle population of 13.9 million in 1990, of which 11.5 million were kept in pastoral systems and 2.4 million in villages. However, recent estimates indicate that Nigeria's national herd comprises 18.4 million cattle (FMARD 2017). These were predominantly zebu (White Fulani, Sokoto Gudali and Red Bororo breeds) and few others, especially Muturu, some Keteku, N'dama and Kuri. Cattle are found throughout Nigeria, but are most common in the northern two thirds of the country. Almost half the total cattle population is permanently resident within the sub-humid zone (Talabi *et al*., 2014a).

Hence, cattle are the single most important livestock species in Nigeria, in terms of animal protein supply, value and biomass. They also provide skin, bone, blood and horn products, and are used to transport people and loads, to pull ploughs, carts and ridgers, and to lift water from deep wells. In addition, the beef industry offers employment opportunity to millions of Nigerians as cattle veterinarians, cattle herders, cattle traders, cattle trade middle men and women, herdsmen, cattle transporters, butchers and meat sellers. In essence, cattle and beef trade provide the largest market in Nigeria, with millions of Nigerians making their livelihood from various beef-related enterprises.

Two-thirds of the world's cattle are in the tropics, but they produce only one-third of the world's supply of meat and milk (Talabi, 2006). The African continent is faced with the challenge of satisfying a dramatic increase in demand for livestock products, in particular for milk and meat. The areas with the greatest potential for significant increases in livestock population and livestock productivity are the sub-humid and the

non-forested parts of the humid zones. The major constraints to increased livestock production include lack of genetic selection, low productivity of indigenous stock, inadequate nutrition (quantitative and qualitative) and high incidence of animal diseases; the greatest constraint being the losses as a result of animal diseases (Oyewusi *et al*., 2015).

Nigeria has high prospects of increasing her cattle population. This is because, among other factors, the market favours producers, due to increased demand for beef; better health and nutritional education, as well as, high economic growth rate. Thus, there is prospect for marketability of beef as there is ready market since Nigeria is nowhere near the FAO recommended requirement of 35 grammes for animal protein consumption per day with the national average of 7 grammes per day (FAO, 2006).

In spite of the prospects above, abundance of vegetation in Ogun and Oyo States of Nigeria, favourable weather and the importance of cattle to the Nigerian economy, many indigenes of Ogun and Oyo States avoid rearing cattle. Cattle production in Ogun and Oyo States is operated mainly by the Fulanis, however some indigenes and Government agencies have ventured into cattle production. The study was conducted in these areas because of the potentials for viable ruminant production in Ogun and Oyo States, with the increasing national human population and increasing demand for beef. This study was carried out to investigate the challenges confronting cattle farmers and to determine risk factors to disease outbreak in relation to methods of husbandry in selected farms in Ogun and Oyo States, Nigeria.

MATERIALS AND METHODS

Location of Study

The study was conducted in some selected cattle farms in Ogun and Oyo States within the South West geographical zone of Nigeria (Figure 1).

Study Design and Sample size determination

The study is a cross-sectional survey of cattle farmers in Ogun and Oyo States. Population of study consist of all cattle farmers within the study area. Sample size was calculated using the formula stated below:

$$n = \frac{Z^2(pq)}{e^2}$$

(Israel, 2018)

Where n is the sample size, Z^2 is the abscissa of the normal curve that cuts off an area α at the tails (1−α is equal to the desired confidence level, e.g., 95%), e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is 1−p. Therefore, assume p = 0.5 (maximum variability). Sample size is 120 based on 95% confidence level, 9% desire level of precision with six clusters.

Sampling Technique and Method of data collection

Stratified random sampling proportionate to size was used after obtaining the estimated number of cattle farmers from cattle farmers` associations in each of the selected local government areas between June 2018 and December 2018. A semi-structured questionnaire was used to gather relevant information that addressed the specific objectives of the study. The questionnaire has two sections; section one is on characteristics of the farm and felt challenges, while section two is on selected risk factors to disease outbreak in the herd. Geographical coordinates of the selected herds was taken with GPS receiver.

Data analysis

The data that were collected for this study were analyzed using statistical package for social sciences (SPSS version 20). Descriptive statistics was used to present the characteristics of the cattle farms in form of frequency tables and percentages. Composite variable was presented as mean ± standard deviation. The level of exposure to risk factors of diseases was evaluated based on responses to eighteen questions on biosecurity. Each risk factor was scored 1 point- with maximum risk level of 18 points. Scores 1-8 was categorized as low risk of exposure while scores above 8 were categorized high risk of exposure to diseases. Association among categorical variables were determined using Chi square test, with p value set at 0.05. The locations of the farms were mapped using ArcMap10.2 software.

RESULTS

Characteristics of the farms in Ogun and Oyo States

The characteristics of the farms in Ogun and Oyo States based on herd size, type of operations and year of operations is presented below in Table 1. The herd size of 51-100 had the highest frequency with (47; 39.2%) and 101-150 had the least frequency (12; 10%) in the total of 120 farms investigated. In terms of the type of cattle operation, mixed farm had the highest frequency with (68; 56.7%) and dairy had the least (3; 2.5%) and the year of operation greater than 10 years had the highest frequency (53; 44%) and 1-5 years had the least frequency (27; 22.5%).

Challenges confronting cattle farms in Ogun and Oyo States

Almost all the cattle farmers had challenges in the course of cattle production (99.2%); however these challenges differ based on system of production (Table 2). Disease is a major challenge facing cattle farmers in the study area and it cuts across all the system of production. These diseases are Foot and Mouth Disease, Trypanosomosis and Dermatophilosis with frequencies of 109 (90.8%), 107 (89.2%), and 104 (86.7%) respectively. The challenge of ticks and flies infestation cut across all the systems (90%). Other major challenges to cattle production identified by the farmers were inadequate grazing area (86.7%) and non-availability of feed all year round (83.3%). Security of the animals was a significant challenge to both pastoralists (91.2%) and farmers practicing semi-intensive system of production (82.4%). The least recognized challenges were non-availability of breeding stock (32.5%), marketing of products (33.3) and hiring of herdsmen (38.3%).

Level of exposure to risk factors to disease outbreak in Ogun and Oyo States

The level of risk of exposure to disease ranged from 2 to 17, mean being 10.8±3.1 (95% CI 10.23 -11. 35). Level of risk to exposure was significantly associated with type of operation and system of operation. Farms with challenges of Trypanosomosis, Ticks and flies infestations and Dermatophilosis were significantly associated with high risk of exposure to disease (Table 3).

Table 1: Characteristics of farms in Ogun and Oyo States, Nigeria

Variables	Frequency	Percentage
Herd size		
1-50	**43**	**35.8**
51-100	**47**	**39.52**
101-150	**12**	**10.0**
≥150	**18**	**15.0**
Years of operation		
1-5	**27**	**22.5**
6-10	**40**	**33.3**
≥10	**53**	**44.2**
Type of cattle operation		
Dairy	**3**	**2.5**
Beef	**49**	**40.8**
Mixed	**68**	**56.7**

Table 2: Challenges confronting cattle farms in Ogun and Oyo States, Nigeria

Type of Challenges	Sedentary System n = 7 (%)	Pastoralist System n = 57 (%)	Cattle Holding Facility System n = 13 (%)	Cattle Market System n = 8(%)	Semi Intensive System n = 34 (%)	Intensive System n =9(%)	TOTAL N=120(%)
Do you have challenges	7(100)	57(100)	13(100)	8(100)	33(97.1)	9* (100)	119 (99.2)
Non availability of breeding stock	3(42.9)	12* (21.1)	3(23.1)	2(25.0)	20(58.8)	5(55.6)	39 (32.5)
Adequate grazing area	5(71.4)	53(93.0)	12(92.3)	7(87.5)	29(85.3)	4*(44.4)	104(86.7)
Hiring of herdsmen	1(14.3)	20(35.1)	6(42.2)	2(25.0)	15(44.1)	2(22.2)	46(38.3)
Security of the animals	2* (28.6)	52*(91.2)	7*(53.8)	5(62.5)	28(82.4)	4*(44.4)	96(80.0)
Cattle grazing over varying distances	1* (14.3)	51(89.5)	10(76.9)	7(87.5)	27(79.4)	5* (55.6)	100(83.3)
Substandard drugs	5(71.4)	43* (75.4)	6(42.2)	6(75.0)	19(44.1)	7(77.8)	78(65.0)
Non availability of feed all year round	5(71.4)	49(86.0)	13(100)	7(87.5)	26(76.5)	6(66.7)	100(83.3)
Marketing of products	2(28.6)	17 (29.8)	4 (30.8)	3 (37.5)	13(38.2)	2(22.2)	40(33.3)
Availability of skilled manpower	3(42.9)	36 (63.2)	6(42.2)	7 (87.5)	15(44.1)	6 (66.7)	66(55.0)

Availability of restraining facilities	**5(71.4)**	**40 (70.2)**	**11(84.6)**	**7 (87.5)**	**20 (58.8)**	**3* (33.3)**	**79(65.8)**
Flies and ticks	**5(71.4)**	**53(93.0)**	**11(84.6)**	**7(87.5)**	**32(94.1)**	**7(77.8)**	**108(90.0)**
Foot and mouth disease	**5(71.4)**	**54(94.7)**	**10(76.9)**	**8(100)**	**31(91.2)**	**8(88.9)**	**109(90.8)**
Trypanosomosis	**4* (57.1)**	**55* (96.5)**	**10(76.9)**	**7(87.5)**	**31(91.2)**	**7(77.8)**	**107(89.2)**
Dermatophilosis	**5(71.4)**	**52(91.2)**	**9(69.2)**	**8*(100)**	**30(88.2)**	**7(77.8)**	**104(86.7)**

Table 2 explains the challenges based on management system, the systems with * shows that they are statistically significant (P-value <0.05)

Table 3: Factors associated with level of risk of exposure to diseases

Variable	Low risk n=22(18.3%)	High risk n=98(81.7%)	p-value
State			
Ogun	**8 (13.8)**	**50 (86.2)**	**.245**
Oyo	**14 (22.6)**	**48 (77.4)**	
Type of operation			
Dairy	**0 (0)**	**3 (100)**	
Beef	**16 (32.7)**	**33 (67.3)**	**.003**
Mixed	**6 (8.8)**	**62(91.2)**	
Herd size			
1-50	**9 (20.9)**	**34 (79.1)**	
50-100	**7 (14.9)**	**40 (85.1)**	
100-150	**2 (16.7)**	**10 (83.3)**	**.857**
>150	**4 (22.2)**	**14 (77.8)**	

Years of operation			
1-5	**7 (25.9)**	**20 (74.1)**	
6-10	**10 (25.0)**	**30 (75.0)**	**. 081**
>10	**5 (9.4)**	**48 (90.6)**	
System of operation			
Sedentary	**5 (71.4)**	**2 (28.6)**	**.000**
Pastoralist	**1 (1.8)**	**56 (98.2)**	**.000**
Cattle Holding Facility	**3 (23.1)**	**10 (76.9)**	**.704**
Cattle Market	**2 (25.0)**	**6 (75.0)**	**.614**
Semi-Intensive	**8 (23.5)**	**26 (76.5)**	**.355**
Intensive System	**4 (44.4)**	**5 (55.6)**	**.035**
Challenge with specific disease and infestations			
Trypanosomosis	**15 (15.0)**	**91(85.0)**	**.006**
Ticks and flies infestation	**17 (15.7)**	**91 (84.3)**	**.028**
Dermatophilosis	**16 (15.4)**	**88 (84.6)**	**.033**
Foot and Mouth Disease	**18 (16.5)**	**91 (83.5)**	**.105**

DISCUSSION

Cattle production plays an important role in the economies and livelihoods of farmers and pastoralists. Cattle are kept for multiple purposes and emphasis on use varies with the production system. In this study, accessible cattle farms were studied based on herd size, years of operation, type of cattle operation and challenges facing

Virtually all the farmers agreed to be facing one challenge or the other.

In terms of the herd size, the most frequent herd size encountered in this study was 51-100 (47; 39.2%). Iro (1994) reported a similar herd size of 80-100 to be the most common herd size encountered among Fulani herding system, even

though, Kubkomawa (2017) earlier found a higher herd size of 100-150 to be the most common herd size. In another related study, Adisa and Badmos (2009) reported a lower herd size of 41-60 as the most common herd size encountered; this could be because most of the farms investigated in this study have been operating their farms for more than 10 years. Nigeria with a population of over 170 million people requires several herds of cattle to satisfy its demand for cattle and cattle products. The most encountered type of cattle operation in this study is the mixed (beef and milk) (68: 56.7%). Dairy operation system (47; 39.2%), which was the least encountered operating system may be attributed to the difference in agro-ecological zone, nature of research and breed of animals characterized.

Most cattle farmers in this study have been operating their farms for more than 10 years (44.5%). This could be because most of these farms investigated were well established farms passed on from generation to generation.

The various challenges facing the cattle farmers were classified based on the types of management systems which includes sedentary, pastoralist, cattle holding facility, cattle market, semi-intensive and intensive management systems. The challenges facing intensive system was statistically significant ($P<0.05$) which means that cattle in intensive system of management are predisposed to lesser challenges on a farm. There was no statistically significant association between the challenges facing cattle farmers and other management systems.

In all the management systems, farmers stressed inadequacy of grazing area as an important challenge in this study. During the short-wet season, grasses grow rapidly producing abundant biomass. The production level of the grazing animal is at its best during this period, but with the onset of dry seasons, both quality and quantity pasture herbage decline and fail to support any performance demand. Majority of the farmers depend on natural pasture for the feeding of their cattle. The problem of inadequate grazing area in this present study was reported to be highest in the pastoralist management system (53; 93%) although there was a statistically significant ($P<0.05$) association between the problem of inadequate grazing area and intensive system of management. This means that the intensive system of management may have the least problem of inadequate grazing.

Similarly, the challenge of cattle grazing over varying distance in search of food and water was also a common challenge faced by cattle farmers. Cattle reared on intensive system of management have the least problem of grazing over long distances in search of food and water. Valleys, dams and rivers are major sources of water as reported by Eugene (2017). These water sources are usually far away from the farm settlements. This long-distance movement serves as a form of stress to the cattle and herdsmen. This particular challenge was statistically significant ($P< 0.05$) in association with the sedentary farming system.

Three common diseases of cattle in this study were Foot and Mouth Disease, Trypanosomosis and Dermatophilosis. These diseases were identified to be major challenges, which were also reported by Talabi *et al*. (2014b) as major diseases of cattle limiting their productivity.

The risk level, based on the types of cattle operation, year of operation, herd size and State were examined. Ninety-eight farms were reported to have high risk of diseases while twenty-two farms were reported to have low risk of diseases. The risks were basically due to the sharing of the

same water and grazing point. Another risk factor is ruminants from other regions visiting the area. Also, animals crossing State borders and national borders, presence of meat markets near the farm, walking animals to the market for sale from time to time. This exposes them to diseases through contact sick animals brought to the market.

Based on the type of cattle operation, the mixed farm operation has the highest number (54) of reported risks. This could be due to the fact that mixed (beef and dairy) operation system was the most encountered farming operation in this study. Based on the years of operation, years of operation greater than 10 years was the most reported to be of high risk of diseases (42; 51.9%). It was deduced that the number of positive reports by farmers of high risk of diseases kept on increasing as the year of operation increased. This shows that the level of bio-security reduced as the year of operation increased. Based on the herd size, farms with greater than 150 heads of cattle were exposed to risk of diseases, this could be as a result of improper management and also overcrowding. Based on the State, cattle in Ogun State were exposed to more risks of diseases than those in Oyo State and this could be as a result of the different climate and abundant vegetation which exposed the animals to diseases as Ogun State is further into the tse-tse belt than Oyo State.

In conclusion, the major type of operation in Ogun and Oyo States were mixed cattle (beef and dairy) operation, the farmers had more than 10 years of experience in cattle production and the range of the cattle herd sizes were more than 150. There were different types of challenges confronting the commercial cattle farms in Ogun and Oyo States, which were associated with their systems of management. A high level of risk of exposure to diseases was significantly associated with dairy farming. Pastoralists and farms are not engaged in intensive farming. Also, farms in Ogun State with herd size of 50-100 and years of operation greater than 10 had a high level of exposure to diseases although not significant. Therefore, most farmers are exposed to a high level of risk of diseases and facing a lot of challenges in their farms.

The Government of Nigeria should increase funding incentives in all States of the Federation that are involved in cattle production. Farmers should be trained and educated on the importance of intensive system of management, zero grazing, bio-security, water resources management. Research support and extension activities in the cattle production sector should be encouraged. There is need to develop short-term courses to train farmers and farm managers in the area of cattle feed and feeding, disease management and control to reduce diseases incidences and consequences.

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