

Factors influencing ruminant production systems of agro-pastoralist in two peri-urban centres of Ogun state

*Yusuf, A. O., Agbato, I. K., Fasae, O. A., Yusuf, O. A, Ogun, M. A., and Bawala, T. O.
Department of Animal Production and Health, Federal University of Agriculture, Abeokuta, P. M. B. 2240, Abeokuta, Ogun State, Nigeria
*yusufao@funaab.edu.ng; zee_mine@yahoo.com

Abstract

With the aim to increase meat production for the increasing population, there is need to review the production potential of the agro-pastorialist as it is the major source of ruminant production in most humid tropics. Therefore, this study was carried out through the administration of 200 structured questionnaires to farmers in Yewa north and Odeda local government areas of Ogun State in order to elicit information on the the factors influencing ruminant production systems in the areas. The data obtain from the study for the two divisions were analyzed using descriptive statistics involving frequency and percentages and pie chart. It was found that in the two local government areas animals were maintained semi-intensively; allowed to browse and offered crop residues. The most favoured breed kept mainly by men is the White Fulani with 89.03% in both Yewa north and Odeda Local Government Areas. PPR was the prevalent disease among the adult animals in the wet season. A preponderance of female cattle over the male for all breeds was recorded in these areas. In all the centres, cattle constituted the major ruminant in the stock (57.40%) while sheep and goat accounted for (24.19%) and (18.41%), respectively. But Yewa north had higher numbers of cattle in stock than Odeda. Crop residues offered all year round was cassava peel. Most of the agro-pastoralists depended on the use of modern medicine for the combating of diseases. Most problems faced by the agropastoralist are income and theft.

Keywords: Ruminant production systems, agro-pastoralist, peri-urban centres

Introduction

There are over 1.1 billion cattle, sheep and goat in the world (FAO, 1985), which form major source of dietary animal protein for human consumption (Alimi, 1987). Due to the ever increasing population and reduction in livestock productivity, most people in the world are hungry and malnourished. To combat this, there must be a corresponding increase in food production, especially livestock, which serves as a major source of high quality protein. FAO (1985) reported that, the developing countries of the world including Nigeria have a daily animal protein intake lower than the recommended. For an improved animal protein intake in Nigeria, however there has to be an improvement in the production of meat and other protein sources from livestock industry and ruminant production is a major part of the industry.

Management system that should be designed for animals should take into cognisance, certain factors such as; breeding programmes, health management practice, herd size and housing (Ademosun, 1988). These are prominent with the modern and intensive system and could be adopted into traditional system for improved productivity.

Agro-pastoralists are semi-settled pastoralists and they are mostly found in northern part of Nigeria. They cultivate areas sufficient to feed their families from their own cereal production. In Borno, most pastoralists fall into this category. They

hold land rights, use their own or hired labour to cultivate land and grow crops such as yams and cassava in addition to the staple cereals such as sorghum, millet and maize. In the system, the average herd of cattle is small compared to other pastoral systems, because they no longer rely solely on cattle and the finite grazing area around their environs that can be reached in a day will limit herd size. Most pastoralists in this system have preferences for particular breeds. This system is associated with wastage of land, poor nutrition and exposure of animals to adverse weather conditions with concomitant unproductive animals' performance. On account of its cheap production requirements, the system forms a source of substantial beef, mutton and chevon consumed by the majority of African communities (Camoens, 1985).

Efforts has been attempted and intensified in the past by Nigerian regional governments on improved ruminant production system particularly beef production with the establishment of cattle fattening centre at Ado Ekiti (ADLIBC), livestock multiplication centre at Lanlate, Livestock Improved Breeding Centre (LIBC), Kwartarkash at Zamfara State and Obudu cattle ranch at Cross River State. Regrettably, however the reproductive and productive performances of these animals have not been impressive

Inadequate performance of ruminant livestock in Nigeria is a bane to the attainment of the recommended daily protein intake of 35g (FAO, 1983). In Africa, of other animal protein sources the contribution of ruminants is of inestimable significance (FAO, 1982). Bulk of the animal protein consumed in Ogun state and indeed Nigeria is derived from ruminants through agro-pastoralism. Poor animal performance usually characterizes the system of management. Therefore, as part of efforts of meeting the dietary protein requirements of Nigerians, attention should be focused on agro-pastoralism through improved production systems which this study stands to address.

Hypothesis

The following hypotheses were tested;

H_o: - There are no significant relationships between the socio-economic characteristics of the agro-pastoralists and the production system.

H_A: - There are significant relationships between the socio – economic characteristics of the agro-pastoralists and the production system.

Methodology

Study Area

The study was carried out at Yewa North and Odeda Local Government areas of Ogun State. The study took place in the peri-urban areas of Yewa north (Eggua, Imoto, Ayetoro, Olodo, Ilakan, Joga, Bamajo) and Odeda (Kila, Alabata, Obete, Osiele, Araromi Obe, Efon, Orile Ilugun, Ikereku) which are about 25km from the major cities of Ilaro and Abeokuta, respectively.

The study was at randomly selected farms located within the areas of study. With the assistance of OGADEP (Ogun State Agricultural development programme) staff in the areas, a Rapid Rural Appraisal (RRA) and reconnaissance survey were done to determine the section of areas with sizeable herdsmen or small holder ruminant farmers. A total of 200 agro-pastoralists were selected, 100 from each Local Government.

Data collection and procedure

The farmers were interviewed personally using the questionnaire as a guide. Each questionnaire was administered to one farmer per farm-hold. A total of 200 questionnaires were used in the

administration, 100 in Yewa North and 100 in Odeda Local Government.

The questions have the following sections;

- Respondents' personal data
- General management
- Herd size
- Marketing
- Health
- Constraints.

Data analysis

Use of broad sheet

Broad sheet comprise of a matrix of rows for each respondents and columns for the variables and it is used to arrange the responses. Analysis was facilitated by blocking respondent with the classes into which they have been stratified. (e.g. Respondents, personal data, general management, herd size, marketing, health, constraints). Responses were coded to form data and used to generate tendency tables. The data obtain from the study for the two divisions were also analyzed using descriptive statistics involving frequency and percentages and pie chart.

Results and Discussion

The socio economic characteristics of the agropastoralists farmers in Yewa and Odeda local government area is presented in table 1. Majority of the agro pastorals (90.51% and 90%) were within the age bracket 31-60 years in Yewa north and Odeda respectively. The value obtained is slightly lower than the figure (93.7%) obtained for farmers engaged in peri-urban dairy production in Ogun state, Nigeria (Adu *et al*, 1998). Agropastorals with the age 41-50 were in the lead having higher percentage (43.43 %) in Yewa north and ages 31-40 in Odeda with 36 %, followed by 31-40 of age with 25.05% in Yewa north and ages 41-50 in Odeda with 30%, this might be probably due to the fact that at this age the farmers might have accomplished most of their dreams settled with related to child bearing and rearing thereby focus majorly on production.

In these areas, ruminant production is an occupation dominated by males with 90.18% and 78% in Yewa north and Odeda, respectively. This in agreement with the findings of Charray *et al* (1992) who reported majority of households in Africa to keep small groups of ruminants alongside cropping. This may also be due to the financial resources and energy demand of the venture. Majority of the agro-pastoralists were muslims, this may be due to the fact that most of the Fulani are from the north, and had Arabic education which was in line with the report by Adu *et al.* (1998) where 87% of the respondent engaged in peri-urban dairy production had only Koranic education. Those with no formal education constituted about 63.49% in Yewa north and 34% in Odeda probably due to the fact that many of the agro-pastoralists in Yewa and Odeda Local Government areas engage in ruminant production on a full time basis, since 81.83% and 70% practiced farming as a major occupation in the areas, respectively. It can also be inferred from this study that majority of the agro-pastoralists were married, since agro-pastoralists are known to have more than one wife.

Table 2 shows the ruminant breeds reared by the agro-pastoralists in Yewa north and Odeda local government areas, respectively. Majority of the farmers (87.81 % and 66.79 %) in Yewa and Odeda, respectively reared white Fulani breed of cattle, which also had the highest number of breed reared altogether 85.74 and 83.33%, respectively in the two local governments. This could be because the breed is the

Table 1: Socio-economic characteristics of agro-pastoralists

Personal characteristics	Yewa North		Odeda	
	Frequency	%	Frequency	%
Gender:				
Male:	54	90.18	39	78
Female:	6	10.02	11	22
Total	60	100.00	50	100
Age distribution:				
21-30	5	8.35	2	4
31-40	12	22.04	18	36
41-50	26	43.42	15	30
51-60	15	25.05	12	24
> 60	2	3.34	3	6
Total	60	100.00	50	100
Religion:				
Christianity	8	13.36	13	26
Islam	52	86.84	37	74
Total	60	100.00	50	100
Educational status:				
Primary	7	11.69	12	24
Secondary	4	6.68	3	6
Arabic education	38	63.46	17	34
No formal education	11	18.37	18	36
Total	60	100.00	50	100
Marital status:				
Married	58	96.86	48	96
Widower	2	3.34	2	4
Total	60	100.00	50	100
Major occupation:				
Farming	49	81.83	35	70
Trading	5	8.35	13	26
Self-employed	1	1.67	2	4
Cattle rearing/farming	2	3.34	0	0
Farming/fishing	1	1.67	0	0
Farming/trading	2	3.34	0	0
Total	60	100.00	50	100
Income (₦):				
1000-5000	12	20.04	10	20
6000-10000	13	21.71	21	42
11000-20000	20	33.40	13	26
21000-50000	15	25.05	6	12
Total	60	100.00	50	100

Source: Field survey, 2008

traditional breed of the Fulani herdsmen. Mohammed (1990) also reported that the interest in the Bunaji breed in south-wetern zone despite their being susceptible to trypanosome infection is an index of less relevance of trypanosomiasis as a limiting factor to cattle production in the zone. Also, the age-long practice among the Fulani and handing Bunaji cattle over to succeeding generations could be a contributory factor to the dominance of this breed in the area. Sokoto Gudali ranked next with 3.71 % and 10.48 % followed by Muturu 2.96 % and 5.15 %, respectively in Yewa and Odeda. The table also showed the other ruminants favoured by the agro-pastoralists, majority of the agro-pastoralists favoured West African Dwarf goat and sheep in Yewa and Odeda local government areas and their numbers were 98.56 % and 98.50 % for goats; and 81.22% and 68.51 % for sheep in Yewa and Odeda, respectively.

The management practicesof the agro-pastoralists in both local government areas is presented in Table 3. Semi-intensive system was practiced by the majority of the agropastoralists recording 75.15 % and 90 % in Yewa and Odeda, respectively. Here, the animals were housed in an open fence building. This may be due to the fact that semi-intensive system of production is a low cost type of management. In Yewa north, agro-pastoralists feed their ruminants' mostly on forages (50.11%)

Table 2: Breeds of ruminants raised by agro-pastoralists (Yewa and Odeda)

Breeds	Number of farmers		Total number reared	
	Yewa north	Odeda	Yewa north	Odeda
Cattle				
White Fulani	36	20	1389	485
Muturu	2	4	48	30
Sokoto Gudali	2	5	60	61
Red Bororo	1	1	26	6
Total	41	30	1620	582
Goat				
West African dwarf	22	26	341	329
Red Sokoto	1	5	5	5
Total	23	31	346	334
Sheep				
West African dwarf	21	27	398	272
Yankassa	2	17	26	118
Ouda	5	0	66	0
Balami	0	1	0	7
Total	28	45	490	397

Source: Field survey, 2008.

Table 3: Management practices of agro-pastoralists in the study areas

Practice	Yewa North		Odeda	
	frequency	%	frequency	%
Management system:				
Extensive system	14	23.38	5	10
Semi intensive system	45	75.15	45	90
Ext. / semi intensive system	1	1.67	0	0
Total	60	100.00	50	100
Type of housing:				
Partitioned wood building	4	6.68	24	48
Partition concrete building	1	1.67	0	0
Open fenced building	38	63.46	20	40
None	14	23.38	4	8
Open fenced pasture	1	1.67	0	0
Tethering	2	3.34	0	0
Backyard	0	0	2	4
Total	60	100.00	50	100
Type of feed:				
Concentrate	0	0	1	2
Crop residue	12	20.04	12	24
Forages	30	50.10	16	32
Crop residue/forages	18	30.06	20	40
Concentrate/forages	0	0	1	2
Total	60	100.00	50	100
Dry season feed:				
Dry forage	0	0	10	20
Concentrates	0	0	0	0
Crop residues	33	55.11	18	36
All of the above	18	30.06	19	38
Dry forage /crop residue	9	15.03	2	4
Wet forage	0	0	1	2
Total	60	100.00	50	100
Identification method:				
Ear notching	5	8.35	12	24
Ear tagging	6	10.02	3	6
Branding	5	8.35	1	2
Paint	0	0	2	4
By coat colour	16	26.72	21	42
Neck chain	24	40.08	5	10
Ear notching/coat colour	3	5.01	0	0
Ear tagging/branding	1	1.67	0	0
None	0	0	6	12
Total	60	100.00	50	100

Source: Field survey, 2008.

Table 4: Breeding data of agro-pastoralists

Breeding type	Frequency	%
Pasture mating	104	94.55
Pen mating	4	3.64
Artificial insemination	0	0
Pasture/pen mating	2	1.82
Total	110	100.00
Birth / birth related problem:		
Normal delivery	82	74.62
Aided delivery	2	1.82
Still birth	4	3.64
Premature birth	4	3.64
Abnormal presentation	15	13.65
Simple birth	2	1.82
Multiple births	1	0.91
Total	110	100.00

Source: Field survey, 2008.

while combination of forages and crop residues forms the major feed source (40 %) in Odeda local government. Most farmers in these areas rarely used concentrate. This commensurate with the report of ILRI (1994) which stated that, sedentary pastoralists graze their cattle from April to November, feed their own crop residues between December and February and then on mixtures of pasture regrowth and tree browse.

The study also revealed that majority of the agro-pastoralists used coat color for the identification of their ruminants in Odeda local government while the agro-pastoralists in Yewa local government employed the use of neck chain.

Table 4 shows the animal breeding data of agro-pastoralists. The data from the two local government areas were merged together for easy analysis. The survey also showed that 94.55 % of the agropastoralists practiced pasture mating as a form of breeding since most of their ruminants are reared outside on the pastures and mate therein. Also the ruminants had most births through normal delivery (74.64 %) while 24.45 % birth difficulty was reported with abnormal presentation having the highest occurrence (13.65%). Multiple birth recorded was very low (0.91 %).

Table 5 shows the merged health data of ruminant agro-pastoralists in the two locations. The study showed that 20.02% of the agropastoralists responded that there were occurrences diseases with PPR being the major disease (20.02%), which occurred during the wet season (52.78 %). This is in contrast with the report of Iyayi *et al.* (2003) who reported inflammation of the hooves in south-western zone. Majority of the agro-pastoralists (91.00%) in the study area responded to patronize veterinarians and 85.54% of them depend on modern medicine and their ruminants were treated by the extension agents.

The production constraints of agropastorals in Yewa and Odeda local government areas

Table 5: Health data on agro-pastoralist system

Occurrence of disease:	**Frequency**	**%**
PPR	22	20.02
Rinderpest	10	9.10
Bluetongue	2	1.82
Contagious bovine pleuropneumonia	8	7.28
Anthrax	2	1.82
None	66	60.06
Total	**110**	**100.00**
Season of the year with disease outbreak		
Dry season	6	5.46
Wet season	58	52.78
Cold season	3	2.73
None	43	39.13
Total	**110**	**100.00**
Veterinary patronage:		
Yes	100	91.00
No	10	9.10
Total	**110**	**100.00**
Types of medication:		
Traditional medication	5	4.55
Modern medication	94	85.54
Traditional and modern medication	11	10.01
Total	**110**	**100.00**

Source: Field survey 2008.

is presented figure 1. Majority of the agropastorals (30.03 %) had capital as major production constraints for the procurement and management of their herd. Another common problem encounter was theft which recorded 25.48 % due to the movement of animals from one place to another, then land (10.01%), disease / theft (10.01%), disease (7.28%), capital / theft (5.46%), land / capital (3.46%), disease / land (2.73%), land / theft (1.82%). The least production constraint reported was disease / capital (0.91%).

Conclusion

Conclusively, the study revealed that, agro-pastoralism is now increasingly being embarked upon in the selected Local Government Areas as a complementary form of income sustenance. Many of the agro-pastoralists reared White Fulani cattle and engage in ruminant production for monetary reasons, most feed their animal's crop residue and forages in the wet season and crop residue in the season dry season. Most (75.15%) rear their animal's semi intensively, and house their animals in open

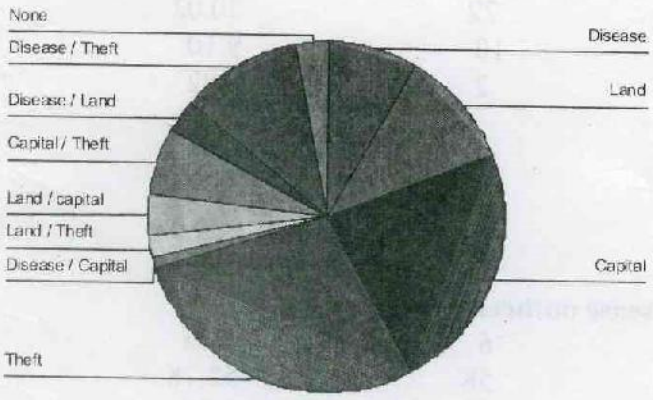

Figure 1. Production constraints of agropastoralists

Source: Field survey 2008.

fenced buildings (63.46%).

Many of the agro-pastoralists use the services of veterinarians (91.00%) in the treatment of their animals. PPR was identified as the most recurring health problem. Majority of the problems associated with their production was theft (25.48%) and inadequate capital (30.03%) for investment.

References

Ademosun A. A, 1988. The potential of small ruminant in meeting the protein needed for the Nigerians In: Proceedings of the.13th Annual conference of the Nigerian Society for Animal Production, Calabar, Nigeria, pp 4 – 5.

Adu, I. F., Aina, A.B. J., Fanimo, A. and Idowu, K. 1998. Peri-urban dairy production in Ogun State. Nig. Journal of Animal, Production. 25: 83-87.

Alimi, T. 1987. The prospect of large scale commercial West African dwarf goat production in South Western Nigeria. In Goat production in the Humid Tropic. Smith O. B. and Bosman H. G. (Eds), 154: 20 – 34. Pudoc Scientific publisher, Wageningen, the Netherlands, 154; 20-34.

Camoens, J. K. 1985. Asian livestock production and management system. In Camoens J. K., Mc Dowell R. E., Bawden R. J. (eds), Proceedings of Regional Workshop on livestock production management. Asian development Bank, Manila, The Philippines. pp. 3 – 35.

Charray, J., Humbert, J. M. and Levif, J. 1992. Manual of sheep production in the humid tropics of Africa. Wallingford: CAB International 187 pp.

FAO. Food and Agriculture Organization of the United Nation,

1982. Animal production and health No. 28, feed from animal wastes. Feeding manual

FAO, Food and Agriculture Organization of the United Nation, 1983. The state of food and Agriculture 1982, FAO, Food and Agriculture Organization of the United Nation; (FAO). Rome, Italy pp 208.

FAO, Food and Agriculture Organization of the United Nation, 1985. Production yearbook 38 Rome, Italy. pp 26–29.

International livestock research institute 1994. ILRI Humid Zone Programme, Ibadan, Nigeria, Annual Report.

Iyayi, E. A., Okoruwa, V. O., Babayemi, O. J., Busari, A. A. and Peters, O. F. 2003. Livestock production pattern of Agropastoralist in peri-urban centres of South-West Nigeria. Nigeria Journal of Animal Production 30 (1): 87-92

Mohammed, T.A. 1990. Pre-urban cattle agropastoralism in the derived savannah of Oyo State, Southwest Nigeria. ILCA Humid Zone Programme Nigeria.

Waters-Bayer, A. 1985. "Traditional Small Ruminant Production in the Subhumid Zone of Nigeria." In Livestock Systems Research in Nigeria's Subhumid Zone: Proceedings of a second I.L.C.A./N.A.P.R.I. symposium held in Kaduna, Nigeria, October 29-November 4, 1984, edited by R von Kaufmann, S Chater and R Blench 141-166. Addis Ababa: I.L.C.A http://www.fao.org/wairdocs/ILRI/x5463E/x5463e0d.htm

Received: 04/07/13
Accepted: 25/02/14