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Constraints to Livestock Production among Rural Households in Southwest Nigeria

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Abstract
The potential of livestock production as a veritable means of livelihood especially in rural areas is constrained by the array of challenges. This study ascertained constraints limiting livestock production potentials among rural households in southwest Nigeria. Simple random sampling was used to select 131 and 116 rural households from Ondo and Osun, respectively. Data were analysed using mean, percentages, Pearson product-moment correlation and t-test. Respondents reared goats and sheep, poultry, and pig purposely for household use (91.9%) and sales (85.0%). Management system mostly practised was semi-intensive (71.7%). Radio ranked highest among information sources. Inadequate capital ($\bar{x}$=2.01) limits goat/sheep production, poultry production was constrained by predators ($\bar{x}$=1.98), while the high cost of livestock input ($\bar{x}$=1.93) limits pig production. Poultry production constraints were significantly higher in Ondo (26.77±9.11) relative to Osun (22.72±11.38). Information sources significantly influenced constraints on livestock production (r=0.309). Household size (r=0.170) and years of experience (r=0.179) significantly relate to constraints to livestock production. The study recommends community and rural banking to facilitate easy access to loans and credit facilities; improved veterinary services and an increase in livestock extension personnel.

Keywords: Rural households, Inadequate capital, Livestock production

Introduction
Livestock production is a dynamic and fast-growing agricultural sector that is pivotal to the development of the agricultural economy, especially in developing countries. Livestock is one of the agricultural resources that contributes largely to rural households' well-being. According to Banda (2021), livestock production has enormous implications for households owing to its diverse potential and benefits. The increase in the demand for livestock products has been occasioned by increased population growth, increased income, and changing diets; thereby making livestock production one of the promising agricultural subsectors in developing countries (World Bank, 2022). This is an avenue for livestock farmers to expand their enterprises and contribute to unemployment reduction. As rightly noted by Umakhihe (2022), the livestock sector is a vital source of animal products that are of high quality and it is crucial to the development of the agricultural economy in Nigeria. It was reported that

the livestock sector in Nigeria can generate ₦33 trillion yearly if the potential of the sector is properly harnessed and managed (Umakhihe 2022). Also, recently the contribution of livestock production to Nigeria's GDP has experienced an increase of 2.38% in the fourth quarter of 2020 compared to the same period of the previous year (Varrella, 2021).

In the same vein, Sasu (2022) reported that by 2050 in Nigeria, the estimated number of cattle, goats, sheep, and poultry in millions are 53.6, 207.8, 78.2, and 1,284.3 respectively, indicating a significant increase in livestock production and the estimated annual growth rate for the demand of livestock products is more than three per cent. This indicates an increase in livestock production activities, hence there is a propensity for increased consumption owing to its demand. This could afford rural households the opportunity of increasing their production.

Livestock has multifunctional roles and several benefits which have contributed greatly to meeting household needs. Livestock products are major sources of protein, which is referred to as first-class protein, and are also rich in vitamins, minerals, and amino acids. These livestock contribute greatly to the quality of human diets which help to prevent several health problems. Livestock production is potentially the only means of getting food derivatives from animals. By-products such as wool, hooves, feathers, horn, bones, skin, and blood are also gotten from animals.

Livestock contributes greatly to the quality of human diets which helps to prevent many health problems. The availability and access to food for human consumption determine the food security of an individual or household. Therefore, livestock production contributes to the food security of an individual, households, nations, and the world at large. Livestock production is a source of household wealth and income, which could be realized through sales of livestock products such as eggs, milk, and meat and its by-products like, blood, skin leather, fur, and dung. The sales of these commodities constitute an important additional source of income for rural households.

Despite the prospects of livestock production, there is an array of constraints militating against its optimum production at small-scale, medium scale and large-scale levels. For instance, the persistent increases in the prices of commodities in Nigeria also affected the prices of raw materials used for making livestock feeds. This had led to increased operational costs for pig, poultry, and fish farmer coupled with poor availability of some of the major feed materials. Though feed crops have been supported with importation, the limitation in foreign exchange in Nigeria has translated to a high cost of livestock feed (Okai, 2019). Besides an increase in livestock feeds, another important constraint to livestock production is a lack of finance and poor capital. Additionally, Friat and Haben (2020) reported insufficient animal feed in quantity and quality, poor technology, and poor veterinary service provision as major constraints limiting livestock production among households.

Objectives of the Study

1. ascertain livestock enterprise characteristics of sampled rural households in the study area.
2. identify information sources on livestock production in the study area.
3. determine constraints limiting livestock production among rural households.

Methodology

The study was carried out in Southwest, Nigeria. Southwest Nigeria lies between Latitude 9° 4' 55.1964" and Longitude 8° 40' 30.9972". It has an estimated population

of 32.5 million people (Ossai, 2022) and agriculture is the predominant economic activity in the Southwest region of Nigeria, especially in the rural areas. Most rural households in the southwest reared livestock. The population of this study consisted of rural households that were involved in livestock production in Southwest Nigeria. The multi-stage sampling procedure was used in this study. In the first stage, out of the six (6) states in southwest Nigeria, two states were randomly selected which were Ondo and Osun States. The second stage involved simple random selection of three local government areas from each State giving a total of 6 LGAs for the two selected states. Idanre, Ifedore, and Ode-Irele LGAs were sampled from Ondo State, while Odo-Otin, Faji, and Ila-Odo LGAs were sampled from Osun State. In the third stage, two village communities were randomly selected from each LGAs to give a total of 12 village communities in both states. Village communities selected with the number of households in Ondo State were Apefon (220) and Ajowa (160) in Idanre LGA, Isarun (211) and Ero (230) in Ifedore LGA and Ode-Ajagba (282) and Ode-Omi (210) in Irele LGA. Communities selected with the number of households in Osun State were Faji (231) and Ila-Odo (191) in Odo-Otin LGA, Ojo (210) and Alasan (160) in Egbedore LGA and Kajola-Ajaba (191) and Ogbagbara (180) in Ila LGA. In the fourth stage, 10% of households were proportionately sampled in each selected community. In Ondo State, a total of 131 rural households were selected, while in Osun State, 116 rural households were sampled to give a total of 247 rural households.

A structured interview schedule was used to garner data from the respondents. The research instrument was subjected to face and content validity. The reliability of the instrument was tested using the split-half method and a reliability co-efficient of 0.8 was obtained. Sources of information on livestock production were measured on a three-point scale of never (0), rarely (1), and always (2), while constraints limiting livestock production were measured on a four-point scale of highly severe constraint (3), severe constraint (2), mildly severe constraint (1) and not a constraint (0). The livestock assessed were goats, sheep, poultry, and pig. Data were analyzed using percentages, mean, standard deviation, and Pearson product-moment correlation.

Results and Discussion

Enterprise Characteristics of Livestock Farmers

Purpose of Livestock Production among Rural Households

This variable had multiple response options which were sales, household use, and cultural activities. Major livestock reared were goats, sheep, chickens, and pigs. Table 1 shows that most of the respondents kept livestock for sale in southwest Nigeria (85.0%). This finding implied that livestock were reared for sale to generate cash income to finance for instance some domestic needs. To some extent, this can help reduce the financial hindrances of livestock farmers. The result from this study is in agreement with the report of Adams (2021) that small ruminants are of financial benefit to households coupled with other multiple roles it plays in meeting households' needs. Livestock serves as a living savings which contributes to household financial resources when they are sold. Sales of livestock in the household could help to boost financial security, thus reducing household risk and vulnerability. Also, the majority of the respondents (91.9%) in the southwest, of Nigeria raised livestock for consumption. Chicken and goat meats were widely patronized and highly relished in the study area. Moreso, different types of livestock have been found to provide savings for households

at different levels. Further, Table 1 shows that a few respondents (8.5%) in southwest, Nigeria raised livestock for cultural purposes. In Southwest Nigeria, goat is used as a mandatory requirement for traditional marriage as it is included in the engagement list among the Yorubas. Sheep and chicken were mostly used for religious (especially during the Muslim festive season) and naming ceremonies.

Years of Experience in Livestock Production

The average respondents' years of experience in livestock production was 12.06 years in southwest, Nigeria, indicating that respondents are advanced in raising livestock. Years of experience determine the level of acquisition of knowledge, skill, and ability to manage the livestock enterprise considering the various technical aspects involved. Livestock is a dynamic and growing sector that has continued to attract many people due to unemployment and the present economic downturn in the country. The situation has made many people seek additional livelihood activities which also include keeping livestock of different species.

Livestock Management System

The livestock management system mostly used by respondents in southwest, Nigeria (71.7%) was the semi-intensive system. Some of the respondents used intensive (28.3%) and extensive (17.4%) management systems. Findings from this study implied that a semi-intensive system was most preferred in southwest, Nigeria. This study showed that most rural households are gradually moving away from the traditional extensive (free range system) to a semi-intensive system. Livestock owners are being encouraged to confine their animals instead of allowing them to roam about the street, causing nuisance and destroying people's farms and property.

Sources of Labour for Livestock Production Activities

About 51% of the respondents used self labour, 64.0% employed family labour, and 3.6% employed hired labour. This indicates that the use of self labour is more pronounced in southwest, Nigeria. However, both self labour and family members participated actively in one form of livestock production activity or the other. It can be inferred that the availability of household labour for livestock production activities enhances livestock production, thereby increasing household income which helps alleviate financial constraints.

Income from Livestock Enterprise/Period

The distribution of the monthly income realised from livestock enterprise is presented in Table 1 with a mean income of ₦26,813.77, indicating that income could be generated from livestock through its sales for household use. Invariably, the result shows that livestock is a source of income for households. However, the amount of income generated from livestock is a function of several factors such as the number of livestock reared, the type of animals possessed, the availability of financial resources, and the method of management employed among many others. The amount of monthly income realized by respondents in this study was low due to the limited number of livestock reared and the subsistence nature of livestock production among rural households. In addition, it was discovered during the field survey that most respondents diversify into livestock production as a secondary occupation to increase household earnings.

Table 1: Enterprise characteristics of livestock farmers

Variables	Percentage (n=247)
Purpose of keeping livestock	
Sales	85.0
Household use	91.9
Cultural purpose	9.7
Years of livestock experience	
1-10	62.3
11-20	26.3
> 20	11.4
Mean±SD	12.50±8.85
Livestock management system	
Intensive	28.3
Semi-intensive	71.7
Extensive system	17.4
Source of labour	
Self	50.6
Family	64.0
Hired labour	3.6
Income from livestock (₦)	
< 20,000	38.1
20,000 - 40,000	43.3
> 40,000	18.6
Mean±SD	26,813.77±22,575.39

Preferred Sources of Information on Livestock Production

Table 2 reveals the preferred sources of information on the rearing of livestock. The result shows that the most preferred source of information on livestock matter is radio ($\bar{x}$=1.22). This was followed by television ($\bar{x}$=0.93), fellow farmers ($\bar{x}$=1.63), extension agents ($\bar{x}$=1.53), and livestock farmers group ($\bar{x}$=0.51). Findings from this study suggest that one of the most commonly available electronics in the study area for accessing information is through the radio. It has the advantage of being operated easily with a battery even when there is no electricity power supply. This implies that information on improved livestock production could be disseminated to the respondents through radio and television which could improve their livestock husbandry techniques and boost their production. The findings of this study align with the submission of Afolabi and Tiamiyu (2021) that livestock farmers farmers' most preferred sources of information were radio and television.

Table 2: Preferred sources of information on livestock production

Sources of Information	Mean	SD
Radio	1.22	0.85
Television	0.93	0.85
Fellow farmers	0.63	0.72
Extension agents	0.53	0.67
Livestock farmers group	0.51	0.64
New paper	0.35	0.55
Community leader	0.35	0.54
Religious leader	0.35	0.56
Friends and neighbour	0.84	0.78
Mobile phone	0.39	0.59

Constraints to Livestock Production

The analysis of the constraints to rural households' livestock production is based on the type of livestock involved because of the peculiarity of each livestock. Hence, the presentations of the result are in Table 3 (goat and sheep), Table 4 (poultry), and Table 5 (pig).

Constraints to Goat and Sheep Production

Table 3 reveals inadequate capital ($\bar{x}$=2.01) as the most severe constraint to small ruminant production in southwest, Nigeria. Other prominent constraints to goat and sheep production were lack of credit facilities ($\bar{x}$=1.85), theft ($\bar{x}$=1.85), high cost of inputs ($\bar{x}$=1.71), inadequate veterinary service ($\bar{x}$=1.71), and inadequate extension services ($\bar{x}$=1.70). No availability of financial capital could be a major constraint to the establishment of livestock enterprises in rural communities. Sometimes, when the foundation stock has been acquired, rural poor households might have difficulties in expanding their stock aside from maintenance and paying for other livestock services. Most rural households have financial difficulties in executing their livelihood activities, probably due to their level of poverty, poor environment, lack of education, and lack of financial institutions on the ground, among several other factors.

When credit facilities are available, households can acquire more livestock and more inputs which would eventually increase production and the income generated. Inaccessibility to veterinary services and extension services were hindrances that could constitute a major obstacle to livestock production. Inadequate veterinary personnel and services might be due to the peculiarity of the rural environment which does not give room for the establishment of private veterinary practices, hence making veterinary services to be scarce and expensive. The theft of animals and destructive habits of animals, mostly goats, is a major problem, especially in rural communities. Small ruminants are found to be very destructive because they are herbivorous animals that eat grasses and crops in people's farms within the community. The result of this study corroborates Singh, Gupta, Upadhyay, Singh, Singh, and Rav (2020) who also found in their study that lack of capital, lack of extension support, lack of credit, inadequate veterinary service, and theft were among the major constraints to goat rearing in Mirzapur District of Uttar Pradesh, India.

Table 3: Constraints to goat and sheep production

Constraints	Mean	SD
Diseases	1.40	0.83
Feeding problem	1.38	0.83
Housing constraints	1.35	0.93
Lack of credit facilities	1.85	1.09
Inadequate capital	2.01	1.01
High cost of inputs	1.71	1.07
Inadequate extension services	1.70	1.08
Inadequate veterinary service	1.71	1.06
Theft	1.85	1.08
Environmental pollution	1.38	0.88
Lack of information on improved methods of production	1.47	0.97
Destructive habits of animals	1.65	0.96
Predators	1.35	0.98
Instability of government policies	1.65	1.13

Constraints to Poultry Production

Prominent constraints to poultry production in the southwest, Nigeria include predators ($\bar{x}$=1.98), inadequate capital ($\bar{x}$=1.96), theft ($\bar{x}$=1.83), lack of credit facilities ($\bar{x}$=1.82), inadequate veterinary services ($\bar{x}$=1.79), and inadequate extension service ($\bar{x}$=1.76). Adequate capital and credit facilities are important inputs for poultry production, most especially for commercial production. The study shows that predators constitute a constraint to livestock production. Most rural households rear their poultry using extensive and semi-intensive systems which gives room for the birds to move about freely. In the course, they are exposed to predators (hawks) which carry the small chicks away. These predators can also include some dangerous reptiles such as snakes and rodents. The finding from this study suggests that respondents do not have what it takes to rear their chickens on an intensive system due to the cost implication and low level of production. The study reveals that livestock extension services are not adequate.

This implied that livestock extension services have been marginalised as this sector has not received much attention. This finding is consistent with the report of Okunlola (2019) that extension services that are supposed to enhance development in all agricultural subsectors are tilted towards the development of the crop subsector to the detriment of other subsectors like livestock, despite the growing demand elasticity and socio-economic constraints to livestock production. It could be deduced from the finding of this study that there were inadequate extension agents in the study area that are supposed to propagate best production practices to the respondents.

Table 4: Constraints to poultry production

Constraints	Mean	SD
Diseases	1.62	0.96
Feeding problem	1.42	0.87
Housing constraints	1.30	0.90
Lack of credit facilities	1.82	1.11
Inadequate capital	1.96	1.02
High cost of inputs	1.69	1.09
Inadequate extension services	1.76	1.12
Inadequate veterinary service	1.79	1.13
Theft	1.83	1.13
Environmental pollution	1.36	0.95
Lack of information on improved methods of production	1.45	1.03
Destructive habits of animals	1.40	1.02
Predators	1.98	1.14
Instability of government policies	1.65	1.15

Constraints to Pig Production

The distribution of respondents based on constraints to pig production is presented in Table 5. The result reveals that the most severe constraint to pig production is the high costs of livestock input ($\bar{x}$=1.93). Other constraints include environmental pollution ($\bar{x}$=1.67), inadequate capital ($\bar{x}$=1.60), inadequate extension services ($\bar{x}$=1.53), housing constraints ($\bar{x}$=1.53), and lack of credit facilities ($\bar{x}$=1.47). The high cost of livestock inputs suggests that respondents could find it difficult to procure some of these inputs because of the high cost which could affect their level of production, thus

reducing the level of benefit derived. Some of these inputs include livestock equipment, improved breeds of animals, feeds, drugs, and vaccines. Findings from this study implied that respondents have financial limitations and inadequate access to credit facilities that could boost their livestock production and further increase the benefits derived and contributions to their well-being.

Table 5: Constraints to pig production

Constraints	Mean	SD
Diseases	1.07	1.03
Feeding problem	1.33	1.23
Housing constraints	1.53	1.30
Lack of credit facilities	1.47	1.36
Inadequate capital	1.60	1.24
High cost of inputs	1.93	1.22
Inadequate extension services	1.53	1.36
Inadequate veterinary service	1.27	1.22
Theft	0.73	0.88
Environmental pollution	1.67	1.30
Lack of information on improved methods of production	1.07	1.10
Destructive habits of animals	1.00	1.07
Predators	0.93	1.03
Instability of government policies	1.20	1.15

Relationship Between Enterprise Characteristics and Constraints to Livestock Production

Table 6 shows that household size (r=0.170) and years of experience (r=0.179) had a significant influence on constraints to livestock production. This indicates that an increase in household size and years of experience does not necessarily imply that livestock farmers will not encounter constraints in their livestock enterprises. Information sources significantly influenced constraints to livestock production (r=0.309) in southwest, Nigeria. This implies that livestock farmers who had increased information still encounter constraints in their livestock enterprises. In essence, livestock farmers' information sources had not helped in overcoming the constraints they face in their livestock enterprises as found in this study.

Table 6: Relationship between selected independent variables and constraints to livestock production

Variables	r-value
Age	0.112
Household size	0.170**
Years of experience	0.179**
Information sources	0.309**

p≤0.05

Differences in Constraints to Livestock Production Between Ondo and Osun

As shown in Table 7, there were significant differences in constraints to goat and sheep production (t=4.371), and poultry production (t=2.811) between Ondo and Osun. Based on the mean values, constraints encountered in Ondo was higher

relative to Osun across the four (4) livestock enterprise assessed in this study. There was a significant difference between constraints to livestock production (t=3.600) in Ondo and Osun.

Table 7: Constraints to livestock production

Livestock Enterprise	State	N	Mean	Mean diff.	t	df
Goat and sheep production	Osun	93	20.01	-5.333	-4.371**	187
	Ondo	96	25.34			
Poultry production	Osun	100	22.72	-4.049	-2.811**	202
	Ondo	104	26.77			
Pig production	Osun	7	19.29	-4.048	-0.719	11
	Ondo	6	23.33			
Livestock production (overall)	Osun	116	38.11	-10.733	-3.600**	243
	Ondo	129	48.85			

p≤0.05

Conclusion and Recommendations

Livestock production provides households with an alternative source of income, though the livestock are also for household consumption. Livestock farmers experienced a loss of animals due to insecurity of animal reared, theft, and predators. Thereby leading to a decrease in income realized from sales of livestock. More so, information on livestock production was not widely sourced by respondents. Poultry production was more constrained than other livestock categories assessed in this study. The potential of livestock production in the southwest can be boosted if livestock farmers can have access to credit facilities, adequate extension services, adequate veterinary services, and stability of government policies.

There is a need to promote and improve rural household livestock production from the free range extensive system to improved and modern production technology by the respondents with assistance from the government. The expansion of livestock production will also lead to an increase in income and cash generated for household needs.

Extension agents should encourage rural households' livestock producers to form cooperative groups through which they can access information and government interventions.

The government needs to promote and improve rural household livestock production thereby transforming the subsistence level of production to a large scale consequently leading to an increase in the production of meat, income, and livestock product for human consumption.

Government should establish community and rural banking so that rural dwellers can also have access to loans and credit facilities to develop their livestock production.

Government should improve veterinary services at all levels. This will consequently improve the livestock health care delivery system in the livestock sector.

The government needs to increase livestock extension personnel that will facilitate the transfer of improved livestock technologies to livestock producers in the rural area.

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