

SMALL RUMINANTS AS A SOURCE OF FINANCIAL SECURITY AMONG WOMEN IN RURAL SOUTHWEST NIGERIA

Isaac Busayo Oluwatayo¹✉, Titilayo Busayo Oluwatayo²

¹University of Limpopo, South Africa

²University of Ibadan, Nigeria

Abstract. The important role played by small ruminants in the lives of households in developing countries cannot be over-emphasized. Small ruminants provide the easiest and readily accessible source of credit available to meet immediate social and financial obligations. In rural southwest Nigeria, women are involved in managing small ruminants by feeding them kitchen waste, and sometimes allow them to graze on surrounding herbs and shrubs. Data for this study was collected through a structured questionnaire administered on a random sample of 450 women from southwest Nigeria. Analytical tools employed include descriptive statistics, regression model and the coping strategies use index (CSUI). A descriptive analysis of socioeconomic characteristics of respondents showed that the average age of the women was 48 years (with only about one-third having tertiary education) and the average household size was seven. The respondents' distribution by the ruminants reared showed that goat was the most preferred because of its acceptability and marketability. However, the regression results showed that educational level, extension contact, experience in small ruminants' rearing and cooperative membership enhanced the income from small ruminants' husbandry. This paper therefore suggested that efforts should be geared at building the respondents' capacity through education and ensuring more extension contact. Another suggestion is that women should come together to form cooperatives as this will assist in risk sharing, and provide them with better bargaining power and access to market information.

Keywords: financial security, rural Nigeria, small ruminants, well-being, women

BACKGROUND TO THE STUDY

The World Development Report (2010) estimated that about 410 million people in Sub-Saharan Africa still live in absolute poverty, surviving under one dollar per day. According to Olayemi (1995), the poor have very little access to basic necessities of life such as food, clothing and a decent shelter, are unable to meet social and economic obligations, lack skills for gainful employment, and have a general lack of self-esteem and few economic assets, if any. In most cases, the poor lack the capacity to liberate themselves from the shackles of poverty. This perpetual situation makes the conditions of extreme poverty to persist and to be transmitted from generation to generation (Obadan, 1997).

In Nigeria for instance, the incidence of poverty is widespread. It is much higher in the rural areas where a greater proportion of the population lives. The World Bank (1996) recorded the total population of the poor in Nigeria at 34.7 million, with the incidence, depth and severity of poverty much higher in rural than in urban areas. Meanwhile, small ruminants (sheep and goats) form an important economic and ecological niche (Channappagouda et al., 2016) in agricultural systems of rural communities across developing countries. This is because small ruminants make a very valuable contribution to household income, especially to the rural poor. These contributions range from precious

✉PhD Isaac Busayo Oluwatayo, School of Agricultural and Environmental Sciences, University of Limpopo, C/O R71 Tzaneen Road and University Street, Mankweng Township, Polokwane, South Africa, e-mail: isaac.oluwatayo@ul.ac.za. <https://orcid.org/0000-0002-8649-2557>

animal proteins (meat and milk), fiber and skins to draught power in the highlands as well as food security in some cases.

Small ruminants and poultry are economically important to smallholder farmers and especially women. The total income share of small ruminants tends to be inversely related to the size of land-holding, suggesting that small ruminants are particularly important for landless people.

Meanwhile, many researchers have found that women perform various roles in small ruminants rearing and farming. According to Dunstan and Clair (1997), women play a much larger role in the production of food crops. Within cropping systems, they perform certain tasks like weeding, fertilizer application and harvesting. Jibowo (2000) stressed that rural women not only assist their husbands in harvesting and carrying farm products from the farm, but also raise small ruminants like sheep, goats and local birds. These animals are kept to serve as emergency sources of funds for household and personal use. In particular, *Fulani* women (women tending cattle) in Nigeria milk the cows for the production of cheese and yogurt. Also, one estimate suggests that women's labor accounts for 25 percent of post-harvest processing of rice (Scott and Carr, 1985).

However, rearing of small ruminants like sheep and goats would have lasting effects on improving the incomes of these people. Ruminants provide their owners with a vast range of products and services. Very often, there are no banking facilities in rural areas, and an easy way to store cash for future needs is through the purchase of sheep and goats (IBC, 2004). In fact, in some areas, small ruminants have been described as the 'village bank'. Thus, small ruminants play an important role in ensuring rural women's financial security. Also, data supports (Maxwell, 1990) that women are better managers of household resources than men.

The objectives of this study therefore include: identifying the socioeconomic characteristics of women engaged in small ruminants' production/rearing in rural southwest Nigeria, examining how small ruminants are being used as a source of financial/economic security by women in the study area and exploring other available and accessible assets/strategies employed by these women in meeting household/domestic obligations or needs.

LITERATURE REVIEW

Challenges of credit acquisition and land ownership in smallholder agriculture

In Nigeria and other developing countries in Sub-Saharan Africa, farming households face numerous constraints. According to Nto and Mbanasor (2008), one main factor is access to credit, a major obstacle to agricultural production and development in these countries. According to Lawal and Shittu (2006), the lack of credit resources causes setbacks to the productivity of farmers. As a result, they have neither the resources to procure improved seedlings, fertilizers and labor nor the resources to transport and market their produce which could improve their productivity and welfare.

There is a growing recognition by the Nigerian farmers of the effect of improved inputs and new technologies on agricultural yield. The use of these inputs and the adoption of high-yielding techniques have given rise to an increased need for agricultural credit, since most Nigerian farmers are small-scale operators and are often limited by unfavorable economic, social, cultural and institutional conditions (Olayemi, 1995). Insufficient capital has prevented agricultural development (Agu, 1998), and in order to improve agricultural production, modern farm inputs such as fertilizers, improved seed, feeds and plant protection chemicals, and agricultural machineries are needed more than hoe and machete technology. Most of these technologies have to be purchased, yet very few farmers have the funds to finance such purchases.

On asset ownership, African women farmers face enormous constraints toward increasing their productivity. They lack the means of production, have little or no access to those inputs that enhance productivity, have no security in terms of rights of land ownership, are severely constrained in time and labor, and have almost no outlets to improve their human capital (Due, 1991). The reality in most of Africa is that few women have traditional or legal title to land. Their access to land is limited on the supply side by legal and institutional factors that affect availability, whereas on the demand side, economic, social and cultural factors affect women's ability to obtain and retain land (Mehra, 1995).

Quisumbing (1993) observed that in five African countries studied, female-headed households had smaller land-holdings and cultivated from 31 to 74 percent of land cultivated by male-headed households. Economic

theory suggests that security of tenure which offers farmers a potential stream of future returns gives them a stake in ensuring its sustainability and is linked to higher productivity and better management (Feder and Feeny, 1991). The limited existing information shows that women in many countries are far less likely than men to have ownership or control of productive assets. In addition, women may not receive the benefits of assets held by men, even when they live in the same household (Deere and Doss, 2006).

The possession of assets helps households and individuals to cope with vulnerability and avoid impoverishment (Hulme and McKay, 2005). It is now generally accepted that African women represent a large proportion of the population in the continent, and a very significant group of farmers. Unfortunately, the position and role of women in Africa's agricultural production and the circumstances under which they are forced to operate are not well understood and appreciated. This undermines their position and contributions to their household economy and agricultural productivity.

Role of small ruminants in the households' social and financial security

The importance of small ruminants in income generation and in the households' social and financial security is well established in literature (Workneh, 1999). Small ruminants have a number of advantages as an integral component of the pastoral production system. The small size of sheep and goats has distinct economic, managerial, and biological advantages. Economically, low individual values mean a small initial investment and, correspondingly, a small risk of loss by individual deaths. Managerially, they are conveniently cared for by women and children, occupy little housing space, have lower feed requirements, and supply both meat and milk in quantities suitable for immediate family consumption. Biologically, small ruminants can withstand droughts and reproduce quickly.

In contrast to large ruminants like cattle which are normally concentrated and remain in the hands of a restricted number of producers (high-income rural households), small ruminants are dominant in almost every low-income rural household. In the dry areas of Northern Nigeria, less than 20 percent of farmers own cattle (ILCA, 1980). In Côte d'Ivoire, Barry (1985) reported that, on average, fewer than four bovine animals are found on the farm where there are ten sheep/goats. This

ownership pattern characterizes the legacy of Sub-Saharan Africa's rural economy as capital constraints limit access to cattle among poor households whilst small ruminants are well suited for their financial and labor resource capabilities.

Small ruminants are a source of food and financial security for the rural poor. According to FAO (1983), more than 50 percent of milk produced for human consumption is from sheep and goats in Niger and Somalia. Thirty-five percent of the total Nigerian meat supply come from small ruminants (Bayer, 1982) and almost 30 percent of the total meat consumed in the semi-arid zone is from small ruminants (Wilson, 1982). Also, it is generally more suitable to slaughter a sheep or a goat than a large animal, such as a cow to feed community members engaged in communally private field work.

From the foregoing, one can no longer overlook the importance of small ruminants in the economy of Sub-Saharan Africa and particularly in that of low-income families. Sheep and goats allow poorer households to maintain their subsistence. Thus, it is critical to examine how important they are in contributing to households' well-being. As Gatenby (1986) put it, "if the aim of a development project is to raise the living standard of the poorer sectors of the community, it is much more likely to do so if it concentrates on the production from small ruminants."

METHODOLOGY

Study area

The study was carried out in Southwest Nigeria, one of the country's six geo-political zones. The zone is composed of six states: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo; it is the home to one of the three major ethnic groups in the country, the Yorubas. Notable occupation/livelihood activities in the region include farming, government jobs, carpentry, trading, bricklaying, driving, private employment etc.

Data sources and sampling method

A four-stage random sampling method was employed in selecting three out of the six states in rural Southwest Nigeria. The first stage of the sampling technique was a random selection of three states. The second stage involved the selection of three Local Government Areas (LGAs) from each of the selected states. The third stage was a random selection of two communities or

villages in each of the selected LGAs. The last stage was a random selection of respondents (women) based on probability proportionate to size. In all, a total of about 500 structured questionnaires were administered, out of which 450 were used in this study. The rest were discarded because of incomplete information. Data was collected on socioeconomic characteristics, socio-cultural and environmental backgrounds, different activities and enterprises engaged in, different livestock raised or reared, incomes from these activities, different kinds of transactions within the communities in which these animals are exchanged, other occupations, other livelihood assets, and income, household welfare and wealth (especially animals). The data was also supplemented with information collected from livestock institutions in the study area.

Analytical techniques

Analytical tools employed to address the stated objectives include: descriptive statistics, ordinary least squares regression analysis, and the coping strategies use index.

Descriptive statistics was used to analyze, describe and summarize the respondents' socioeconomic, cultural and environmental related variables.

Regression model was employed to examine the determinants of income from small ruminants' rearing. The implicit and explicit form of the regression model (Greene, 2003) employed is: $Y = f(X_1, X_2, X_3, X_4, \dots, X_{10}, e_i)$

$$Y = a_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e_i$$

where:

Y = Income in Naira (NGN) generated from livestock sales

X_1 = Age of respondents (years)

X_2 = Marital status of respondents (married = 1, single/divorced/widowed = 0)

X_3 = Educational status of respondents (years)

X_4 = Household size (number)

X_5 = Extension contact (yes = 1, no = 0)

X_6 = Membership of cooperative society (yes = 1, no = 0)

X_7 = Flock size (number)

X_8 = Experience in livestock husbandry (years)

X_9 = Other assets (value of other assets in NGN)

e_i = Error term

The Coping Strategies Use Index (CSUI) was used in analyzing the frequency of use of all available and accessible coping strategies employed by women in the study area; a coping strategy index (CSI) was developed by ranking. The extent of use of coping strategies was expressed by using a four-point scale with the scoring order 3, 2, 1, and 0 for those frequently used, occasionally used, rarely used and not used, respectively. The formula employed to obtain the CSI score was adapted from Islam and Kashem (1999) who estimated the use of ethno-veterinary medicine in livestock management and rearing. Their approach was modified to obtain the CSI as:

$$CSUI = N_1X_3 + N_2X_2 + N_3X_1 + N_4X_0$$

where:

CSUI = Coping strategies use index

N_1 = Number of households using a particular coping strategy frequently

N_2 = Number of households using a particular coping strategy occasionally

N_3 = Number of households using a particular coping strategy rarely

N_4 = Number of households not using a particular coping strategy.

The CSUI was used in a rank order to reflect the relative position of each of the CSIs in terms of their use. The extent of use of coping strategies was obtained for all respondents in the study area.

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

A number of socioeconomic characteristics of respondents were subjected to statistical analysis; the results are presented below.

The result of data analysis presented in Table 1 showed that the average age of respondents in the study area was 48 years, implying that they were young and able to work. The distribution of respondents by marital status revealed that more than half were married (57.6 percent), while only about 22.9 percent were single. The rest were either divorced or widowed (19.5 percent). The educational distribution of respondents indicated that only about one-third (33.8 percent) were educated up to tertiary level. While about 48.7 percent did not receive formal education, the rest received either primary

or secondary education. The average household size of respondents was seven, and the large household size affected their income per capita. Also, the respondents' distribution by membership of social group/association (especially cooperative societies) indicated that over three-quarter (77.3 percent) belonged to an association (group). The associations are very important in creating a platform to showcase what they have to sell, thereby making it easier to convert small ruminants into credit or readymade cash.

Table 1. Distribution of respondents by socioeconomic characteristics

Variable	Frequency	Percentage
Age		
<30	53	11.8
31–40	92	20.5
41–50	155	34.4
51–60	108	24.0
>61	42	9.30
Marital status		
married	259	57.6
single	103	22.9
widowed	37	8.2
divorced	51	11.3
Educational status		
no formal education	219	48.7
primary	47	10.4
secondary	32	7.1
tertiary	152	33.8
Household size		
1–3	81	18.0
4–6	98	21.8
7–9	161	35.7
10–12	70	15.6
13 and more	40	8.90
Membership of social group		
Yes	347	77.1
No	103	22.9
Total	450	100.0

Source: own elaboration based on survey data.

Types of livestock raised by respondents

According to the analysis of respondents based on types of livestock raised, goat was found to be the most preferred with a score of about 72 percent (Table 2). This is largely due to its wide acceptability and ease of domestication in terms of adaptability to the prevailing environmental conditions in the study area. Again, goat meat is consumed by all households in the study area, and it has no religious or cultural restrictions, which makes it better placed among residents of the study area. More so, in terms of marketability, goats are more attractable since they have a higher rate of survival when compared to other small ruminants/livestock. The second highest is poultry (53.5 percent) and this is closely followed by sheep (28.1 percent) and swine (11.3 percent).

Table 2. Distribution of respondents by types of livestock reared

Livestock	Number	Percentage
Poultry	241	53.5
Sheep	127	28.1
Goat	324	71.9
Swine	51	5.8
Rabbit	13	2.9
Others	21	4.7

Source: own elaboration based on survey data.

Explaining different ways by which small ruminants are being employed as a source of financial security in rural southwest Nigeria

In ascertaining the role of small ruminants for women in rural southwest Nigeria, respondents were given the freedom to express their minds. Their replies were summarized as presented in Table 4. Most of the respondents (67.7 percent) indicated that the income from small ruminants rearing helped them significantly in addressing other important issues relating to the welfare of household members, since the income generated from other sources was not enough to cope with increasing demands in the home front. For example, the rearing of small ruminants provided a leeway for unforeseen financial demands like paying hospital bills (10.4 percent) and assistance in responding to emergency situations (7.8 percent). Also, most women rely on income

from small ruminants' sales especially when there is scarcity of food resulting from lean harvest. Again, a sizeable number of respondents rely solely on the rearing of small ruminants in paying the school fees of their wards. This is done in such a way that the repayment plan of any money borrowed/loan taken coincides with the time these animals are ready for the market (i.e. attain market weight).

Table 4. Ways by which small ruminants assist women in meeting their households' obligations

Variable	Frequency	Percentage
Buying food	15	3.3
Paying school fees	189	42.0
Paying house rent	45	10.0
Paying medical bills	47	10.4
Building house	33	7.3
Buying other household needs	09	2.0
Assistance in responding to contingency situations	35	7.8
Performing burial rights	23	5.1
Collateral/pledge for land used for farming activities	13	2.9
Performing marriage rights	17	3.8
Meeting naming ceremony obligations	24	5.3
Total	450	100.0

Source: own elaboration based on survey data.

Explaining the determinants of income from small ruminants' rearing among women in rural southwest Nigeria

In explaining the determinants of income from small ruminant rearing (Table 5) among women in the study area, the ordinary least squares regression model was employed. The result shows that the respondents' age, educational status ($p < 0.05$), household size ($p < 0.00$), extension contact ($p < 0.10$), membership of cooperatives ($p < 0.10$), experience ($p < 0.00$) and size of the flock ($p < 0.00$) are important determinants. Thus, while the coefficients of educational level, extension contact, membership of cooperatives and flock size are positively

related to income from small ruminant rearing, the coefficients of age, household size and poverty status demonstrate a negative correlation. In other words, the higher the respondents' educational status and the larger the flock size, the higher the income from small ruminant rearing. This is because education enhances the bargaining power of farmers, adoption of better management practices and access to information. All this can assist in boosting productivity and market access for increased income among farmers. Also, the higher the experience of farmers, the higher the income from small ruminant husbandry. On the other hand, the negative coefficients of household size and marital status of the farmers imply that an increased household size reduces income per capita which invariably deteriorates the standard of living and increase poverty. Thus, increased income is assumed to be a precursor of being able to meet the household's financial obligations.

Table 5. Regression result showing how small ruminants assisted the respondents in meeting financial obligations

Variable	Coefficient
Age (X_1)	0.0143 (0.947)
Mstat (X_2)	-0.0093 (0.085)
Eduyrs (X_3)	0.371** (0.129)
Hsize (X_4)	-0.136*** (0.034)
Extcont (X_5)	3.731* (2.146)
Coopmem (X_6)	0.043* (0.023)
Flock size (X_7)	0.910*** (0.192)
Experience (X_8)	0.0207*** (0.035)
Other assets (X_9)	0.105 (0.391)
Constant	0.859*** (0.093)

Coefficients significant at: * 10%, ** 5%, *** 1%. Standard errors are in parenthesis.

Source: own elaboration based on survey data.

Table 6. Ranking of accessible strategies employed based on the frequency of use

Coping strategies	Frequently used (3)	Occasionally used (2)	Rarely used (1)	Not used (0)	CSUI	% of households	RANK
Withdraw from personal savings	31	22	31	11	168	8.1	5
Take a loan from cooperatives	158	43	10	08	570	27.5	1
Asking friends/relatives	15	26	44	18	141	6.8	6
Borrowing from banks	23	42	48	12	201	9.7	4
Reduce expenditure on non-food items	79	54	45	14	390	18.8	2
Withdrawing children from school to assist	8	17	63	110	121	5.8	7
Run to local authorities	4	6	54	123	78	3.8	8
Reduce food intake	67	21	44	120	287	13.8	3
Migration to cities	3	10	35	35	64	3.1	9
Begging for alms	3	18	20	57	55	2.6	10

Source: own elaboration based on survey data.

Strategies employed by women in southwest Nigeria in meeting domestic/household obligations

Women in rural southwest Nigeria employ a number of strategies to cope with household demands. These range from skipping meals and reducing food intake to migrating to city centers in search of other jobs, or staying with relatives. Again, the frequency of use of these strategies was assessed to ascertain the most available, accessible and employed strategy in the study area using the coping strategies used index (CSUI). Thus, the strategy with the highest index takes the highest value while the least adopted (harnessed) of all the strategies takes the lowest value. Using this criterion to rank the strategies can be useful in assisting policy actors in providing or choosing effective intervention strategies that will impact the lives of these women and also have a multiplying effect on the respondents. Based to the results presented in Table 6, taking loans from cooperatives (27.5 percent) was the most frequently employed strategy. According to (Bharadwaj, 2012), membership of cooperatives is known to be an effective strategy for coping or mitigating the effects of external shocks, especially among vulnerable and poor sections of the population. This is

closely followed by reducing expenditure on non-food items (18.8 percent) and reduction in food intake (13.8 percent). All of these are measures taken by women to cope with meeting their household obligations. The least adopted of these strategies is begging for alms and assistance, used by only about 2.6 percent of the respondents.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary of findings

This study examined the extent to which the rearing of small ruminants assists women in rural southwest Nigeria in meeting their household and other important obligations. The analysis of socioeconomic data obtained through the questionnaires reveals that the respondents were young people able to work (with over two-third below 50 years of age). The respondents' distribution by household size shows that the general household size is fairly large. Farming was found to absorb the largest amounts of labor among the respondents (closely followed by the informal sector). As regards small ruminants and other livestock raised, it was discovered that goat is the most preferred of all the small ruminants

raised in the study area because it has no religious or cultural restrictions and is consumed by all households.

When it comes to the determinants of income from the rearing small of ruminants, years of formal education, flock size, household size, experience and membership of cooperatives were found to be significant. Thus, a change in any of these variables will affect the income (a proxy for the ability to meet financial obligations) either positively or negatively. For instance, the coefficients of years of formal education, extension contact, experience and being a member of cooperatives were positive; this indicates that an increase in any of these variables will positively affect the realizable income from the rearing of small ruminants, while an increase in household size will negatively affect the income from small ruminants.

In general, small ruminants rearing and husbandry are ways of storing wealth and meeting unexpected financial obligations, especially among the poor in the study area.

Conclusion

The role of small ruminants in helping women of rural southwest Nigeria meet their social and economic needs cannot be overemphasized. This is closely connected to the different roles that these animals play in providing a sigh of relief, especially when there are shortfalls in crop production or unexpected contingencies resulting from ill health, changes in government policies, etc. It is a well known fact that these animals are the easiest and readily accessible means of coping with shocks (especially of the idiosyncratic type). This underscores the need for governments to provide an enabling environment that will better enhance and encourage investments in small ruminants' husbandry.

Policy recommendations

Based on the findings from the study, it is recommended that:

- Effort should be intensified at building capacity of women in rural southwest Nigeria through education because this will enhance their bargaining power, provide them with better access to information and increase their productivity.
- Women should also come together to form cooperatives among themselves as a form of a safety net against shocks. This can also provide an avenue to

access initial take-off capital needed to start small ruminant farming.

- The government should also intensify their efforts in making more extension agents available and accessible to these women. This can be done through employing more hands to complement the available personnel and giving them incentives for higher performance.

ACKNOWLEDGEMENTS

The authors of this research work gratefully acknowledge the support and cooperation of the Director of Institute for Money, Technology and Financial Inclusion (IMTFI) – Professor Bill Maurer, the Institute's Administrator – Ms. Jenny Fan, other IMTFI team members and participants of the second annual IMTFI conference held at the University of California, Irvine, United States, for their comments and useful suggestions regarding the mid-term report on this research work. This research has been supported and sponsored by the Institute for Money, Technology and Financial Inclusion at the University of California, Irvine. The opinions, findings, and conclusions or recommendations expressed in this paper are those of the authors and do not necessarily reflect the views of the Institute for Money, Technology and Financial Inclusion at the University of California, Irvine, USA.

REFERENCES

- Agu, C. C. (1998). Loan management of Agriculture. In: M. O. Ijere, A. Okorie (Eds.), *Readings in Agricultural Finance* (pp. 119–130). Lagos: Longman.
- Barry, M. B. (1985). A strategy for the intensification of production systems using small ruminants in Côte d'Ivoire. In: R. T. Wilson, D. Bourzat (Eds.), *Small ruminants in African Agriculture*. Proceedings of a conference held at ILCA. Addis Ababa, Ethiopia.
- Bharadwaj, B. (2012). Roles of Cooperatives in Poverty Reduction: A Case of Nepal. *Admin. Manag. Rev.*, 24(1), 120–139.
- Bayer, W. (1982). Small ruminant production in the sub-humid zone: review of literature. ILCA Sub-humid Programme, Kaduna, Nigeria. Research Reports 1982/83.
- Channappagouda, B., Ananth, R. D., Deekshit, G. V. (2016). Extent of Women's Participation in Small Ruminants' Management. *Int. J. of Sci. Env. Tech.*, 5(5), 3197–3202.

- Deere, C. D., Doss, C. R. (2006). The Gender Asset Gap: What Do We Know and Why Does It Matter? *Femin. Econ.*, 12(1–2), 1–50.
- Due, J. M. (1991). Policies to Overcome the Negative Effects of Structural Adjustment Programs on Female-Headed and Low Resource Households in East and Central Africa. In: C. H. Gladwin (Ed.), *Structural Adjustment and African Women Farmers*. Gainesville: University of Florida Press.
- Feder, G., Feeny, D. (1991). *Land Tenure and Property Rights: Theory and Implications for Development*. World Bank Econ. Rev., 5(1), 135–153.
- Gatenby, R. (1986). *Sheep production in the tropics and subtropics*. Tropical Agricultural Series. Longman: London, New York.
- Greene, W. (2003). *Econometric Analysis*. New Jersey: Prentice Hall.
- Hulme, D., McKay, A. (2005). *Identifying and Measuring Chronic Poverty: Beyond Monetary Measures*. CPRC-IIPA Working Paper 30. Manchester: Chronic Poverty Research Center.
- ILCA (1980). *Economic trends. Small Ruminants*. Bulletin 7. International Livestock Centre for Africa, Addis Ababa, Ethiopia.
- IBC (Institute of Biodiversity Conservation) (2004). *The state of Ethiopia's farm animal genetic resources: Country Report*. A contribution to the first report on the state of the world's animal genetic resources, IBC. May 2004. Addis Ababa, Ethiopia.
- Islam, M. M., Kashem, M. A. (1999). *Farmers' Use of Ethno-veterinary Medicine (EVM) in the Rearing and Management of Livestock: An Empirical Study in Bangladesh*. *J. of Sust. Agric.*, 13, 4, 39–56.
- Jibowo, A. A. (2000). *Essentials of Rural Sociology* (2nd impression). Abeokuta, Nigeria: Gbemi Sodipo Press Ltd.
- Lawal, J. O., Shittu, T. R. (2006). *Resource availability and cocoa farming in Kwara State*. Being a paper presented at Science Association of Nigeria at Tai Solarin University of Education, Ijebu-Ode, Ogun State.
- Maxwell, S. (1990). *Food security in Developing Countries: Issues and Options for the 1990s*. *IDS Bull.*, 21(3), 2–13.
- Mehra, R. (1995). *Women, Land and Sustainable Development*. ICRW Working Paper No. 1.
- Nto, P. O. O., Mbanasor, J. A. (2008). *Analysis of Credit Repayment among Arable Crop Farmers under Rural Banking Scheme in Abia State, Nigeria*. *Int. J. Agric. Rural Dev.*, 11(1), 37–40.
- Obadan, M. O. (1997). *Analytical Framework for Poverty Reduction: Issues of Economic Growth versus other Strategies*. In: *Proceedings of the 1997 Annual Conference of the Nigerian Economic Society*.
- Olayemi, J. K. (1995). *A Survey Approach to Poverty Alleviation*. A Paper Presented at the NCEMA National Workshop on Integration of Poverty Alleviation Strategies into Plans and Programs in Nigeria. Ibadan, Nov. 27th – Dec. 1st.
- Quisumbing, A. (1993). *Improving Women's Agricultural Productivity as Farmers and Workers*. Paper prepared for a Special Study on Women in Development, Washington, DC: World Bank, April.
- Scott, G., Carr, M. (1985). *The impact of technology Choice on Rural Women in Bangladesh: Problems and opportunities*. Washington: World Bank.
- Wilson, R. T. (1982). *Husbandry, nutrition and productivity of goats and sheep in tropical Africa*. In: R. M. Gatenby, J. C. M. Trail (Eds), *Small ruminant breed productivity in Africa*. *Proceedings of a seminar held at ILCA*. Addis Ababa, Ethiopia.
- World Bank (1996). *Nigeria: Poverty in the Midst of Plenty, The Challenge of Growth with Inclusion*. A World Bank Poverty Assessment, May, 31. Washington, DC: The World Bank.
- World Development Report (1990). *Poverty*. Oxford: Oxford University Press.