



COMPARATIVE ANALYSIS OF WOMEN PARTICIPATION IN SMALL RUMINANTS PRODUCTION IN NORTHERN AGRICULTURAL ZONE OF PLATEAU STATE, NIGERIA

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ABSTRACT

The study assessed women participation in small Ruminants production in Northern Agricultural zone of Plateau State. Multi-stage sampling technique was used in selecting 198 respondents, Data were collected using structured questionnaire and analysed using both descriptive and inferential statistics. The results of chi-square analysis revealed that 49.1% of respondents raised both Goat and Sheep in Jos north while comparison of Jos north and Jos south shows a systematic association with a χ^2 of 6.4287 at less than 10% probability level. The result also revealed that 46.5% of the respondents reared small ruminants' animals for house consumption, while about 33.8% of the respondents reared goats for sales and 15.2% reared for gift. Furthermore, the result revealed that most (94.4%) of the respondents were involved regularly in cleaning and grooming of animals. These activities had mean score of 0.94 and ranked number 1st. Similarly, providing feed and water to the animals had 91.9% with mean score of 0.92 and was ranked 2nd, preparation of concentrate feeds had 90.4% with mean score of 0.90 and ranked 3rd. The major constraints faced by the respondents in livestock production participation were, communal conflict (97.0%), inadequate fund (96.5%), cultural barriers (91.4%), religious barrier (88.4%), high cost of inputs (87.8%) and inadequate extension services (86.9%) among others. It was concluded that in the study area, no discriminatory provisions preventing women's participation in small ruminants' production were in place. However, their participation is limited by pressure from household heads in the study area. Based on the finding, it is recommended that, government should organize women through cooperatives societies to develop ways to encourage women's participation in agriculture. This will increase the women's accessibility to productive resources, credits, ideas, and innovations. Also, education and awareness should be given to the women to address the issues related to cultural barriers and religious belief and credit facilities and grants by government/NGOs, in order to boost the production of livestock and living standard of the women farmers in the study area.

Keywords: Participation, fodder, Innovations, Awareness, Cooperatives

INTRODUCTION

Women play important roles in agriculture, undertaking a wide range of activities relating to food production, processing and marketing; and beyond farming, they are involved in land and water management: most often they are collectors of water, firewood and fodder. They have access to a store of local knowledge on the medicinal use of plants; they have been in the forefront of soil conservation programmes; and it is women who perform most of the household labour devoted to animals (Arshaq *et al.*, 2010). One of the rationales for improving women participation in agriculture is that when a woman is educated, her children tend to be better fed and healthier. As a woman earns income, she is more likely than the man to spend it



on improving the well-being of the family. This scenario can build women self-esteem and lead to a more participatory role in both public and family decision making (FAO, 2011).

Accordingly, Arshaq *et al.* (2010) reported that, about 70 million rural households were estimated to own livestock of one species or the other. The resource-poor small and marginal farmers and landless labourers' own majority of the livestock resources. In view of this, sustainable development of the livestock sector would lead to more inclusive development and empowerment of women. Women's role within a livestock production system varies from region to region while distribution of ownership of livestock between men and women is strongly connected to social, cultural and economic factors. Women are typically responsible for milking ewes, processing and selling milk products, providing feed/fodder and water, caring for newborn lambs/kids and sick animals. Young girls are also involved in the grazing of goats and sheep whereas married and young women are responsible for household activities (Lo, 2007). Most of the work and decision-making by women takes place at the household level, in which important decisions are taken jointly by both the man and woman heading the household. These decisions include which animals to sell and at what price, disease diagnosis and treatment of sick animals.

Damisa *et al.* (2019) pointed out that various researches conducted on the contribution of women to agricultural development in the country suggest that women contribution to farm work is as high as between 60 and 90% of the total farm task performed. Rural women in particular are responsible for half of the world's food production and produce between 60 and 80 percent of the food in most developing countries. Sharon (2008) viewed that both women and men play critical roles in agriculture throughout the world, producing, processing and providing the food we eat. Women make up half the rural population and they constitute more than half of the agricultural labour force. Yet, despite their contribution to global food security, women farmers are frequently underestimated and overlooked in development strategies. Charles *et al.* (2008) opined that the importance of the role played by women in agricultural production is such that the widespread failure so far to reach women farmers through formal extension services has major repercussions for national output and food security as well as social justice. The importance of small ruminants is indicated by their various functional contributions (meat, milk, fibre, skin etc), socio-economic relevance and stability to farming systems (Rangnekar, 2006). According to Elliot *et al.* (1998), sheep and goats are animals that are favorites for the poor because they are cheap to manage and they mature early and breed readily, therefore increase in number quickly. They have small body size, and reach slaughtering weights early. They can easily thrive under poor conditions and are more drought tolerant than animals like cattle. These characteristics make small ruminants such as sheep and goats easy to keep for many people. Participation is an obvious strategy for the success of any development activity. It is a powerful tool for mobilizing new and additional resources. According to Bayola and Intong (2012) participation entails the ability of individuals to have an input in the decision-making process and to play a role in measures aimed at improving their quality of life. Rural women play a key role in livestock management and household activities. They are the majority of agricultural producers playing various roles in agricultural sector such as fisheries and livestock management (Mulugeta and Amsalu, 2014). Women make a significant contribution to food production particularly in the area of small livestock (Arshad *et al.*, 2013).

Livestock production in the developing world is also one of the important economic activities. Their products are highly valued, especially when compared with crops. For instance, the average global price of a tonne of red meat is more than 10 times higher in value than that of soya bean, whereas that of milk is 70% higher (FAOSTAT, 2011). This makes



milk and meat to rank as some of the agricultural commodities with the highest gross value of production (VOP) in the developing world (FAOSTAT, 2011). In the last decade, livestock have represented between 17% and 47% of the total agricultural VOP in developing country regions which Nigeria is not an exception (FAOSTAT, 2011). Over the last 40 years, the value of livestock production has seen an average of 2.7% increase per year in sub-Saharan Africa (SSA), 3.4% in Central America and 4.1% in SE Asia. According to Herrero *et al.* (2012) livestock play multiple roles in supporting livelihoods, among which is as a source of household income. The roles of livestock in the developing world are many, spanning from the social to the economic, to the environmental. Women play important roles in agriculture, undertaking a wide range of activities relating to food production, processing and marketing; and beyond farming, they are involved in land and water management: most often they are collectors of water, firewood and fodder. They have access to a store of local knowledge on the medicinal use of plants; they have been in the forefront of soil conservation programmes; and it is women who perform most of the household labour devoted to animals (Hulela, 2010).

Accordingly, Anonymous (2012) reported that, about 70 million rural households were estimated to own livestock of one species or the other. The resource-poor small and marginal farmers and landless labourers' own majority of the livestock resources. In view of this, sustainable development of the livestock sector would lead to more inclusive development and empowerment of women. Women's role within a livestock production system varies from region to region while distribution of ownership of livestock between men and women is strongly connected to social, cultural and economic factors. Women are typically responsible for milking ewes, processing and selling milk products, providing feed/fodder and water, caring for newborn lambs/kids and sick animals. Young girls are also involved in the grazing of goats and sheep whereas married and young women are responsible for household activities (Lo, 2007). Most of the work and decision-making by women takes place at the household level, in which important decisions are taken jointly by both the man and woman heading the household. These decisions include which animals to sell and at what price, disease diagnosis and treatment of sick animals. The study was therefore carried out to examine the participation of women in small ruminants production in the Northern Agricultural Zone of Plateau State. The specific objectives of this study were to;

- i. assess the participation of women in small ruminants' production;
- ii. examine the reasons for participation in small ruminants' production;
- iii. describe the constraints to participation in small ruminants' production by women farmers.

MATERIALS AND METHODS

The Study Area

This study was conducted in Plateau State, Nigeria located between latitude 8° 22' and 10° 24' North and longitude 8° 32' and 10° 38' East. The State comprises a landmass of 30,913 square kilometers or 6,678,162 acres (NBS, 2006a). Plateau State falls largely within the northern guinea savannah zone which consists mainly of cropland, short trees and grasses. The upper Plateau however has unique mountain vegetation which is influenced by the near temperate climate. The major soil types of the State belong to the broad category of tropical ferruginous soils which are much thinner on the Plateau but attain greater depths in the southern parts of the State. The State is characterized by a near temperate climate on the Jos Plateau with a hot and humid climate in its lower parts. Generally, weather conditions are warmer during the rainy season (April – October) and much colder during the Harmattan period (December – February). The mean annual temperature in the State ranges from 20 to 25 degree Centigrade, while the mean annual rainfall figures ranges from 131.75cm in the southern part



to 146cm on the Jos Plateau. Employment-oriented Private Sector Development Programme (EoPSD, 2010)

Plateau State consists of seventeen Local Government Areas with a combined population of 3,178,712 people (NBS, 2006b). For the purpose of this study, Jos North and Jos South Local Government Areas were used. The agricultural activities in Plateau State include arable farming, livestock and vegetable cultivation. Acha, sorghum, and millet are the most widely cultivated staple foods; but cash crops, especially potatoes, yams, and green vegetables, are grown for the plateau's largest urban markets at Jos.

Sampling Techniques and Sample Size

A multi-stage sampling technique was used to select respondents for this study. In the first stage, two Local Government Areas (LGAs) namely: Jos North and Jos South were purposively selected for field survey. This is based on the high involvement of women in small ruminants and other small animals like poultry. The second stage involves a random selection of five villages from each of the selected LGAs. In the final stage, 25% of the registered women farmers were randomly selected from the sampling frame making a total of 198 respondents as the sample size of the study as shown in Table1.

Table 1: Sampling Procedure and Sampling Size

Local Govt. Areas	Villages	Sample Frame	Sample Size (25%)
Jos North	Naraguta	84	21
	Tudun Wada	76	19
	Rusau	85	21
	Jos Jarawa	73	18
	Babale	92	23
Jos South	Kogom	83	21
	Nyango	77	19
	Kanadap	68	17
	Rahwol	72	18
	Mazaram topp	82	21
Total	10	792	198

Source: Reconnaissance Survey (2021)

Method of Data Collection

Data for this study were collected using a structured questionnaire which was administered to the respondents drawn from the study area.

Method of Data Analysis

The data collected were analysed using both descriptive and inferential statistics. The type of descriptive and inferential statistics used is as follows:

Descriptive statistics

Descriptive statistics such as the mean, frequency distribution, percentages, range, and ranking were used. The descriptive statistics tool was used to achieve objectives i and ii

Inferential statistics

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \quad \dots (1)$$

Where;

O_i = Observed Value (Actual value)

E_i = Expected Value



RESULTS AND DISCUSSION

Table 2: Distribution of Small Ruminant Production by Women Farmers

Location	Small Ruminant Type			Total	χ^2 -Value
		Sheep	Goat		
Jos North		32 (28.6)	25 (22.3%)	55 (49.1%)	6.4287*
Jos South		15 (17.4%)	32 (37.2%)	39 (45.3%)	
Total		47	57	94	

Source: Field survey (2022)

The results in Table 2 showed that almost half (49.1%) of the respondents raised both Goat and Sheep in Jos North. Table 2 describes the chi-square comparison of Jos north and Jos south shows a systematic association with a $\chi^2 = 6.4287$ at less than 10% probability level. The Chi square test of independence found evidence that location was statistically significantly related to type of small ruminant type of animals reared by female farmers ($\chi^2(2)=6.4287$, $p=0.040181$). In Jos North 32(26.8%) of women had sheep, 25(22.3%) had goats, 55(49.1%) had both. In Jos South 15(17.4%) of women had sheep, 32(37.2%) had goats, 39(45.3%) had both. This agreed with Yakubu and Idoma (2020) who declared that almost half of respondents in Nafada Local Government Area of Gombe State engaged in rearing of goats and sheep.

Participation in Small Ruminant Production by Women Farmers

Participation in small ruminant's production by women farmers can be seen in Table 3. The result in Table 3 revealed that most (94.4%) of the respondents were involved regularly in cleaning and grooming of animals. These activities had mean score of 0.94 and ranked 1st. Similarly, 91.9% of the respondents participates in providing feed and water to the animals with mean score of 0.92 and ranked 2nd. The results also revealed that, 90.4%, 88.8% and 84.3% of the respondents were involved in preparation of concentrate feeds, providing special feed and medicine to sick animals and taking care of pregnant animals with mean score of 0.90, 0.89 and 0.84 which were ranked 3rd, 4th and 5th, respectively. The results also showed that 81.8% were engaged in cleaning of Pen with a mean score of 0.82 and ranked 6th while Culling and disposal of animals, Colostrum's feeding, Purchasing of animals, Fixing price to animals were ranked 7th, 8th, 9th and 10th respectively among others. The preceding results showed that women in the study area performed most of the key livestock production and management activities.



Table 3: Participation in Small Ruminant Production by Women Farmers (n=198)

Activities	Frequency	Percentage	Mean Score	Rank
General Management				
Cleaning and grooming of animals	187	94.4	0.94	1 st
Grazing of animals	77	38.8	0.39	16 th
Colostrum's feeding	143	72.2	0.72	8 th
Preparation of concentrate feeds	179	90.4	0.90	3 rd
Providing feed and water to the animals	182	91.9	0.92	2 nd
Care of pregnant animals	167	84.3	0.84	5 th
Care of young ones	86	43.5	0.44	13 th
Health Management				
De-worming of animals	45	22.7	0.23	18 th
Bringing veterinary doctors at home	75	37.9	0.38	17 th
Taking Sick Animals for treatment	101	51.0	0.51	11 th
Providing special feed and medicine to sick animals	176	88.8	0.89	4 th
Housing Management				
Construction and Management of pen	86	43.4	0.43	14 th
Cleaning of Pen	162	81.8	0.82	6 th
Marketing of Animals	83	41.9	0.42	15 th
Entrepreneurial Activities				
Selection of animals	95	47.9	0.48	12 th
Purchasing of animals	136	68.7	0.69	9 th
Culling and disposal of animals	152	76.7	0.77	7 th
Fixing price to animals	112	56.6	0.57	10 th
Mean ± SD		0.63±0.22		

Source: Field survey (2022)

This is consistent with Oyelami *et al.* (2017) who acknowledged that women were highly involved in livestock farming. This agrees with the findings of Arshad *et al.* (2013) who reported that; rural women play a key role in the livestock management and household activities, playing numerous roles in the agricultural sector like fisheries and livestock and make a significant contribution to food production particularly the livestock. This disagrees with the findings of Munawar *et al.* (2013) who reported that, women take part in livestock activities like cleaning of animals, cleaning of shed, watering of animals, making of dung cakes, and providing fodder to livestock in addition to house hold activities. Raising of poultry, goat and sheep is totally under the control of rural women and they don't have to consult their male counterparts for decision making. Role of women in national economy vary from nation to nation, locality to locality and region to region according to social norms and values.

Reasons for Women Participation in Small Ruminants Production

Reasons for participation in small ruminants production is presented in Figure 1.

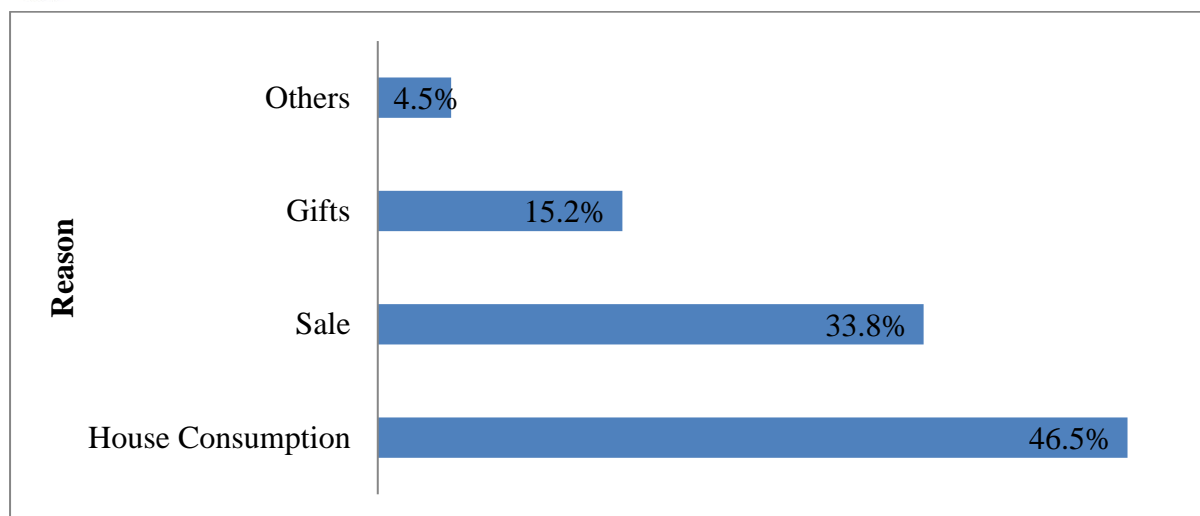


Figure 1: Distribution of respondents by reason of Participation in Small Ruminant Production

Source: Field survey (2022)

Figure 1 showed that 46.5% of the respondents reared small ruminant's animals for house consumption; this implies that the first priority of women is provision of food and protein for the family. The livestock contributes to high body nourishment to the respondents; hence they might retain adequate quantities of milk and meat for their family consumption due to their knowledge of its nutritional value. The livestock farming is a high source of food and gives assurance of food security. Products such as milk, meat and eggs are relatively high in protein and are also sources of energy, vitamins and minerals. Although the staple foods of most animal-keepers are cereals, they generally place high value on food from livestock. The findings further showed that 33.8%, 15.2% and 4.5% of the respondents raised livestock for income, gift and other reasons, respectively. This implies that livestock and their products are also exchanged or sold to generate income. In this way livestock food becomes available in local markets as well as international markets while additional income is generated from livestock farming by the respondents in the study area. At farm level, the importance of livestock as additional source of income and the actual sources of income vary across ecological zones and production systems, which in turn determine the species raised as well as the products and service generated.

Cash can be generated from sales of livestock products regularly (milk) or periodically (live animals, wool, meat, hides) or from services (draught, transport). Dairy product is the most regular income generator as reported by the respondents, families used livestock for meeting uncertainties. Availing credit from banks would be difficult for the farmers due to the procedures involved and in sudden need for the money, farmers might have felt it easier to rely on the sale of livestock. Livestock farming proffers solution to other family problems. This is in accordance with Kulkarni *et al.* (1989) and Saini *et al.* (1989) who stated that livestock development has been shown to increase income, consumption and repayment capacity in India. In other words animals are offered as a gift for marriage ceremonies. Sallah and Christmas festivities as indicated by the respondents' reason for participation in small ruminants' production. This result is in line with that of Nagaratna *et al.* (2013) on assessing the benefit of livestock to the livelihood of farmers of Western Maharashtra, India.



Constraints towards Participation in Livestock Production

The result on Table 4 shows the constraints faced by the respondents in the study area. The results revealed that communal conflict (97.0%) and inadequate funds (96.5%) were the major challenges faced by the respondents and were ranked 1st and 2nd, respectively. The study also revealed that cultural barriers (91.4%), religious barrier (88.4%), high cost of inputs (87.8%) and inadequate extension services (86.9%) were the major constraints to women participation to small ruminant production in the study area and were ranked 3rd, 4th, 5th and 6th, respectively. The result further shows that poor marketing system (81.8%), theft (80.8%) and were ranked 7th and 8th, respectively as the constraints to women participation in small ruminants production in the study area. Other challenges faced by the respondents include poor government policy (71.7%) and poor pricing of Animals (67.2%) were ranked 9th and 10th respectively in the study area. Yisehak (2008) posited that, some of the constraints to women participation in livestock production were lack of capital and access to institutional credit comparing use of time, poor technical skills and lack of access to improved extension services. He further reported that, women in agricultural sector are involved in home production activities which involve child care, food preparation, and carrying of water and fuel, which consequently affects their concentration on livestock. Similarly, Ayoade *et al.* (2009) asserted that, inadequate capital, pre-occupation with household chores, dominance by spouses and involvement in crop production for the family were the constraints affecting the participation of women in agricultural production. Similarly, Simon *et al.* (2016) reported the major constraint to women participation in livestock production which includes high cost of feed and inadequate capital.

Table 4: Distribution of Respondents According to their Constraints towards Participation in Livestock Production

Constraints	Frequency*	Percentage	Rank
Communal conflict	192	97.0	1 st
Inadequate funds	191	96.5	2 nd
Cultural barriers	181	91.4	3 rd
Religious barrier	175	88.4	4 th
High cost of inputs	174	87.8	5 th
Inadequate extension services	172	86.9	6 th
Poor marketing system	162	81.8	7 th
Theft	160	80.8	8 th
Poor government policy	142	71.7	9 th
Poor pricing of animals	133	67.2	10 th

Source: Field survey (2022)

*Multiple responses

CONCLUSION AND RECOMMENDATIONS

The study concluded that, women participated in small ruminants' production. In the study area, no discriminatory provisions preventing women's participation in small ruminants' production were in place. The Chi square test of independence found evidence that location was statistically significantly related to type of small ruminant type of animals reared by female farmers. However, their participation is limited by pressure from household heads in the study area. Based on the findings of this study, it is recommended that any policy that will further increase the level of education of women would increase their participation in ruminant production. The study recommends that, contribution of women to agricultural and rural development should be maximized by implementing solutions to the specific problems they



encounter as economic and social Stakeholders. The existing women's group in the village should be organized and strengthened to increase women's access to extension services, credit facilities, agricultural inputs and even marketing services.

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