



## STRATEGIES REQUIRED BY WOMEN FARMERS IN RUMINANT ANIMAL PRODUCTION IN BENUE STATE, NIGERIA

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### Abstract:

The study investigates strategies required by women farmers on ruminant animal production in Benue State, Nigeria. Four research questions guided the study. Survey research design was adopted for the study. The population for the study was 805 respondents comprising of 205 Agricultural extension officers and 600 women farmers. Purposive sampling technique was used to get a sample of 307. A-29 structured items questionnaire titled: Women Farmers in Ruminant Animal Production Questionnaire (WFRAPQ) were developed from literature and used for data collection. The instrument was face validated by three experts. Cronbach Alpha method was used to determine the internal consistency of the questionnaire items which yielded a reliability coefficient of 0.84. The data collected was analyzed using weighted mean and standard deviation. Findings revealed that women farmers require management practices in ruminant animal production and that women encountered several challenges in ruminant animal production amongst others. It was recommended among others that women farmers should be provided with conducive environment in which livestock could be effectively reared.

**Keywords:** women farmers, ruminant, and animal production

### 1. Introduction

In most rural communities, women are mostly involved in the management and sale of small scale livestock and their products and in the use of income accruing from the sales. Despite their role in livestock production, women's control has traditionally declined due to increase in productivity and products being marketed through

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organized groups such as cooperatives whose membership is predominantly men (Kergna, Diarra, Kouriba, Kodoi, Teme and McPeak, 2010). In animal production, studies have shown that the types of products and distance to markets can influence the level of control that women have over these products and the income derived from the sale of ruminant animals (Njuki, Kaaria, Chamunorwa and Chiuri, 2011). Ruminant animals are mammals that belong to the order Artiodactyla. They are animals with a complex stomach unlike the non-ruminants that have simple stomach. They eat and digest forages or plant based feed by swallowing it first and allowing it to get moistened in the rumen which is the first compartment of the complex stomach. The swallowed food is later regurgitated by the animal and re-chewed to breakdown the residue for digestion through a process called rumination or chewing the cud. (Ekele, 2014). Ruminant animals are categorized into two main classes based on their body sized namely, the large ruminant animals and the small ruminant animals. Large ruminant animals include cattle, water buffalo, giraffe and Carmel while some of the small ruminant animals are sheep, goat and antelope. In this study, emphasis is placed on sheep, goat and cattle.

Economically, ruminant animals are used as meat and their milk are good sources of animal protein; they serve as sources of raw materials and means of foreign exchange earnings. They serve also as sources of income and sources of gainful employment. With the enormous contribution of ruminant animals, women farmers can key into strategies for its production and take the opportunity that accrues from its production to improve their livelihood.

The few existing analysis of the role and economic contribution of women to livestock development and the key challenges they face are inconclusive (Aklilu, Almekinders, Udo and Van der Zijpp, 2008). This inconclusiveness could be explained, in part by the fact that the considerable involvement of women in livestock production is underestimated. In addition, of all rural agricultural extension services, women are able to access only 5 percent of what men access (Food and Agricultural Organization FAO, 2001). Other likely explanation as to why research in the role and economic contribution of women to livestock production include the fact that gender roles, relations and ideologies are not studied prior to and during interventions involving women and livestock. Furthermore, attitudes and values regarding livestock, between men and women are highly polarized (Kristjanson, Waters-Bayer, Johnson, Tipilda Njuki and Baltenweck, 2010).

Within pastoralist and mixed farming systems, livestock play an important role in supporting women and in improving their financial situation because women are heavily engaged in the sector. An estimated two-thirds of poor livestock keepers totaling approximately 400 million people in developing countries are women (Thornton, Kruska, Henninger, Kristjanson, Reid, Atieno, Odera, and Ndegwa, 2002). They share responsibility with men and children for the rearing of animals. Particular species of ruminants and type of activity are more associated with women than men. According to Gueye (2000) and Tung (2005), women often have a prominent role in

managing poultry and dairy animals and in caring for the homestead (Tangka, Jabber and Shapiro, 2000). When tasks are divided, men are more likely to be involved in constructing housing and the herding of grazing animals, and in marketing products if women's mobility is constrained.

Perhaps for this reason, small-scale dairy projects have been popular investments for development projects that aim to improve the lot of rural women (Food and Agricultural Organization 2011). Female-headed households are as successful as male-headed households in generating income from their animals, although they tend to own smaller numbers of animals, probably because of labour constraints. Livestock ownership is particularly attractive to women in societies where access to land is restricted to men (Bravo-Baronann, 2000). Pastoralist and small-scale mixed farming systems continue to be important in meeting the needs of rural consumers, the demands of growing urban populations for meat and milk are on the increase which are complimented from intensive commercial systems of ruminant production. This has implications for the engagement of women in the livestock sector because of the different roles, responsibilities and access to resources that are evident with different scales of production system and at a different point on the production and marketing chain (FAO, 2011).

Women are significantly involved in small livestock rearing (FAO, 1997, Klush and Panliwar 2006, Arshad, Muhammed, Mahmood, Randhawa and Khalid, 2010). As reported by Quisumbing Brown, Haddad and Meztzen-Dick (1995), Rural and national development can hardly be achieved with the neglect of this important and substantial segment of the agricultural sector. In recent times, there has been increasing sociological attention focused on trends in domestic or house hold labor pattern which lay emphasis on the need for women involvement in massive ruminant animal production (Bianchi, Milkie, Sayer and Roburson, 2000). The assumption here is that women tend to have lower educational status than men, and thus have fewer opportunities for finding suitable wage employment in the formal sector. It therefore, becomes imperative for women to seek other ways to fill the gap between their cash income and what is needed for household survival. Livestock production has the capacity to provide protein-rich food to billions of small holder rural food producers and urban consumers, generate income and employment, reduce vulnerabilities in pastoral system, intensify small-scale mixed crop-livestock systems and sustain livelihood opportunities to millions of livestock keepers. Increase consumption of livestock products, particularly in the fast-growing economies of the developing world has been an important determination of rising prices for meat and milk (Delgado, 2003).

The resultant price surge that will emanate from products of ruminant animals provides new incentive and opportunities for using livestock as an instrument to help poor people escape poverty due to the multiple benefits that they offer and the multiple roles that they play (Aklilu, et al, 2008). As poor livestock-keeping household tends to be net sellers of livestock products, they benefit from rising livestock prices. Moreover, vulnerable groups, particularly women and the landless frequently engage in livestock

production, thus, highlighting the multifaceted virtues of livestock production as a path way out of poverty (Heffernan and Misturelli, 2009). Livestock are often the only asset women can own/control and can be sold to meet emergency and family needs. Livestock also play important roles in securing household food security. This happens through various pathways: i) in times of food shortages, household sell livestock to purchase other food such as cereals and legumes. ii) income from regular livestock and livestock product sales is used for food purchases to supplement household food production and to diversify diets. Livestock are one of the largest non-land assets in rural asset portfolios and are widely owned by rural households and perform multiple functions. Livestock constitute a popular productive asset with high expected returns through offspring sale or consumption of products and their use in farming systems. Livestock can also be accumulated (bought) in good times and depleted (sold) in bad times for the purpose of consumption smoothing. Livestock value chains are however, often more complex than crop value chains making it difficult to recognize immediate potential entry points for interventions.

According to Kristjanson, Waters-Bayer, Johnson, Tipilda, Njuki and Baltenwen (2003) more than 600 million poor livestock keeper are rural women. Furthermore, Thorenton, Krusha, Henninger, Kristjanson, Reid and Robbinson (2003) points out that little research has been conducted in recent years on rural women's roles in livestock keeping and the opportunities livestock-related interventions could offer them. This is in contrast to considerable research on the role of women in small-scale crop farming, where their importance is widely recognized and lessons are emerging about how best to reach and support them through interventions and policies (Quisumbing and Pandolfelli, 2011). It is often easier for many women in developing countries to acquire livestock assets, whether through inheritance, markets or collective action processes, than it is for them to purchase land or other physical assets or to control other financial assets (Rubin, Tezera and Caaldwell, 2010). The relative informality of livestock property right can, however, be disadvantageous to women when their ownership of animals is challenged. Interventions that increase women's access and rights to livestock, and then safeguard the women from dispossession and their stock from theft or untimely death could help women move along a pathway out of poverty. Evidence of ownership of livestock by women is, however scanty due to the fact that the collection of sex-disaggregated data has been common in agricultural surveys. Grown and Deese (2007) states that data was collected in individual ownership of farm animals, where the rest assumed that all the livestock was the property of the household, or the head of the household rather than of the individuals within the household. As a result, most of the comparisons of livestock ownership have been between male and female-headed households. The few surveys that have looked at individual ownership of livestock have reported on the percentages of households where women were reported owning different species of livestock (Valdivia, 2001).

These studies have highlight the role that small ruminants play especially in securing food, milk, protein and cash, and in increasing women's bargaining power.

The reports however, cautions that even in cases where women may have ownership of these species, the marketing and decision-making on the use of money from these assets may still be in the hands of men, thereby undermining the benefits that would be expected to result from women's ownership. Other qualitative studies provide evidence of the differences in ownership of species, with women more likely to own small stock such as goats, sheep and poultry, and men more likely to own large stock such as cattle and buffalo (Bravo-Baumann, 2000; Grace, 2007; Hefferman, Misturelli and Pilling, 2003; Yisehak, 2008).

Doss, Grown and Deere (2007) averred that in order to get a better understanding of gender inequalities in asset ownership, it is important to look at both whether women own or do not own livestock, as well as the numbers and value of what they own. The ownership of livestock and other assets has a bearing on how and who makes decisions on these assets. While some data exists on the relationship between land ownership and agricultural decision-making, this is not the case for livestock. Often however, these two aspects are not interlinked or followed up in livestock research which makes it difficult to understand the relationship between ownership and decision-making. Owing to the complexity of ownership, information on rights that individuals, especially women have, over assets is important..

It is widely recognized that small livestock such as goats and sheep are especially important for women. They have more easy access to them, can own them and have control of the animals and their products. While women may not be able to own cattle in some countries, they have control of livestock products (Dieye, Ly and Sane, 2005). Women may also benefit more from particular points of value chains such as informal trading, processing of products and service providers. In many cases, however, such value chains or segments of value chains where women are found are often low value. Identifying these value chains and increasing their value is critical to increasing women's benefits from livestock production and marketing. An analysis that identifies these points on the value chains, and leads to the selection of interventions that have been used and can be used to increase their value and benefits to women, is crucial. This requires data in the current role of livestock in women's livelihoods, and the challenges and opportunities that women face with regard to acquiring, managing and maintaining livestock (Dieye, et al., 2005).

Women are major contributors in the agricultural economy, but face various constraints that limit them from achieving optimal livestock production and agricultural development. These constraints include: limited access to land, water and credit facilities, limited information on prices of marketing systems provided by extension agents, which would mean that they find it more difficult to access and maintain profitable market and generate more income, limited decision-making powers because of unequal power relations within household (IFAD, 2009). Although, women are involved in and may control production, they often do not own the means of production – namely, livestock, land and water (Galab and Rao, 2003) (Shicai and Jie, 2009). Women often lack access to the services and input delivery systems in livestock

production, which are male, dominated (Shicai and Jie, 2009). A report by (FAO, 2011) argues that if women were to have access to the same level of resources as men, agricultural productivity would go up by 10 – 30 percent and agricultural output would increase by up to 4 percent. It therefore becomes necessary from the aforementioned to investigate the strategies required by women in livestock production in Benue State.

## 2. Purpose of the Study

The purpose of the study was to identify strategies required by women farmers in ruminant animal production in Benue State, Nigeria. Specifically, the study sought to: identify the management system in ruminant animal production by women farmers in Benue State:

1. ascertain the extent of milk production by ruminant animal production by women farmers in Benue State;
2. examine the feeding procedures of ruminant animal production by women farmers in Benue State;
3. identify the challenges of women farmers in the production of ruminant animal in Benue State.

### 2.1 Research Questions

The following research questions were posed for the study.

1. What are the management systems required by women farmers in the production of ruminant animal production in Benue State?
2. To what extent are women farmers involved in the production of milk by ruminant animals in Benue State?
3. What are the feeding procedures of ruminant animals?
4. What are the challenges faced by women farmers in the production of ruminant animals in Benue State?

## 3. Methodology

Four research questions guided this study. Survey research design was adopted for this study. Survey research design is a plan, structure and strategy that an investigator adopts in order to obtain solution to research problems using questionnaire in collecting, analyzing and interpreting the data. This design is suitable for the study because the study made use of questionnaire developed from literature to collect data from respondents. The area of the study was Benue State, the population for the study was 805 consisting of 750 women farmers and 55 extension officers. Using purposive sampling technique, a sample of 307 was drawn from the population. The instrument for data collection was a 29 items questionnaire titled: *Women Farmers in Ruminant Animals Production Questionnaire (WFRAPQ)* developed from literature reviewed. The questionnaire was subjected to face validation by 3 – experts two from the Department

of Animal Production and one from the Department of Agricultural Education all from the University of Agriculture, Makurdi, Benue State. Four response options were used i.e. Highly Required, Required, Slightly required and not required for research question one and three, while agreed, strongly agreed disagreed and strongly disagreed were used for research question two and four with corresponding value of 4, 3, 2 and 1 respectively. Cronbach alpha reliability coefficient was used to determine the internal consistency of the instrument and a reliability coefficient of 0.84 was obtained indicating a high consistency. The instrument was administered by the researchers with the help of four research assistants. All the copies of the instrument were retrieved for data analysis. Data collected were analyzed using weighted mean and standard deviation to answer research questions. The average mean of 2.50 was used for decision-making. Any item with a mean rating of 2.50 and above was regarded as required while any mean rating less than 2.50 was regarded as not required.

#### 4. Results

##### A. Research Question 1

What are the management systems used in the production of ruminant animals in Benue State?

**Table 1:** Mean Rating and Standard Deviation of Agricultural Extension Officers and Women Farmers in Management Systems for Ruminant Animal Production (N = 307)

S/No.	Items	$\bar{x}_1$	$\bar{x}_2$	SD	$x_g$	Remark
1	Provision of houses (pen) for ruminant production.	2.55	2.70	.50	2.63	Required
2	Prevent ruminant animals from being more than twice a week.	2.60	2.69	.51	2.65	Required
3	Mate in the ratio of 1:10 (one male to 10 females).	2.87	3.00	.55	2.94	Required
4	Feed ruminant animals with low quality roughage and very little quantity of concentrate.	3.03	2.56	.61	2.80	Required
5	Exercise ruminant animals regularly to prevent sluggishness	2.80	2.75	.60	2.78	Required
6	Raise ruminant animal by preventing disease attack by regular hygiene practice.	2.70	2.50	.40	2.60	Required
7	Trim hooves regularly to prevent over-growth, foot root or lameness.	2.76	2.66	.45	2.71	Required

Key:  $\bar{x}_1$  = Mean one,  $\bar{x}_2$  = Mean two, SD = Standard Deviation

Data in Table 1 revealed that respondents required all the management systems for ruminant animal production with mean of 2.50 and above. The mean ranges from 2.55 to 3.00 indicating that women farmers from Benue State required all the management systems for ruminant animal production. The standard deviation ranges from .40 to .61 which showed that respondents are close in their response.

## B. Research Question 2

To what extent are women farmers involved in the production of milk from ruminant animals in Benue State?

**Table 2:** Mean Ratings and Standard Deviation of Extension Agents and Women farmers on extent of Milk Production

S/No.	Items	$\bar{x}_1$	$\bar{x}_2$	SD	$\bar{x}_g$	Remark
1	Bulk of the milk comes from cows which is inadequate for consumption	3.10	3.15	.40	3.13	Agreed
2	Goat and sheep produces less milk for human consumption in Benue State.	2.82	2.80	.41	2.81	Agreed
3	Women farmers do not lay emphasis on rearing goat and sheep for milk production.	3.10	3.32	.50	3.21	Agreed
4	The management system for ruminant does not encourage good feedings for the animals, hence, less milk production.	2.90	2.75	.48	2.83	Agreed
5	Women farmers do not engage in ruminant animal rearing.	2.96	2.80	.44	2.88	Agreed
6	Climate change, desertification and population explosion has encouraged free movement of ruminant, hence, less milk production.	2.75	2.50	.56	2.63	Agreed

**Key:**  $\bar{x}_1$  = Mean 1,  $\bar{x}_2$  = Means 2, SD = Standard Deviation,  $\bar{x}_g$  = Grand mean

Data presented in Table 2 showed that the mean of the respondents ranges from 3.10 to 3.32 which are above the cut off point of 2.59. This indicates that the respondents agreed on the extent of milk production by ruminant animals in Benue State. The standard deviation ranges from .40 to .50 indicating that the respondents are too far from one another in the response.

## C. Research Question 3: What are the feeding procedures of ruminant animals?

**Table 3:** Mean Rating and Standard Deviation of Agricultural Extension Officers and Women Farmers in Feeding Procedure of Ruminant Animals in Benue State (N = 307)

S/No.	Items	$\bar{x}_1$	$\bar{x}_2$	SD	$\bar{x}_g$	Remark
1	Feed ruminant animals with hay, silage and roughages.	2.85	2.53	0.55	3.06	Required
2	Feed a mature cow of an average weight of about 300 to 400kg with about 150 to 250g Digestible crude protein (DCP) on daily basis.	2.67	2.80	0.58	2.74	Required
3	Feed ruminant with 6 to 11 Mcal (Mega Calorie) of metabolizable energy (ME) for maintenance.	3.22	2.90	0.60	2.69	Required
4	Feed lactating cow with an additional 40 to 50g of DCP and about 1.2 – 1.3 Mcal of metabolizable energy.	3.06	2.85	0.62	2.96	Required
5	Feed about 290g DCP and 12.4 Mcal ME for pregnant cow.	2.40	2.45	0.40	2.43	Required
6	Feed cow with more than 2.5 – 3% of dry matters content of body weight.	2.78	2.76	0.41	2.77	Required
7	Feed growing lamb with digestible crude protein of 33 to 67g digestible crude protein or 18 to 21.5% of the daily ration.	3.12	3.20	0.56	3.16	Required
8	Feed sheep fatteners with an average dry matter intake of about 5% of their body weight.	2.00	2.40	0.50	3.20	Required



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9	feed ruminant with about 52 to 80g of digestible crude protein or 12 – 13% of dry matter intake.	2.50	2.60	0.60	2.55	Required
10	Feed sheep with 1.49 - 2.92 Mcal for early gestation period (about 15 weeks)	2.80	2.85	0.55	2.83	Required

Key:  $\bar{x}_1$  = Mean 1,  $\bar{x}_2$  = Means 2, **SD** = Standard Deviation,  $\bar{x}_g$  = Grand mean

Data presented in Table 3 revealed that the mean of respondents ranges from 2.00 to 2.40 for item 5 and 8 which indicates that's the respondents rated the items not required. The mean of items 1 to 4 and 6 to 10 ranges from 2.50 to 3.20 which indicate that the respondents rated the items as required.

#### D. Research Question 4

What are the challenges faced by women farmers in the production of ruminant animals in Benue State?

**Table 4:** Mean Ratings and Standard Deviation Extension Officers and Women Farmers on Challenges Faced by Women Farmers in the Production of Ruminant Animals in Benue State (N = 307)

S/No.	Items	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_g$	SD	Remark
1	Land tenure system prevents women farmers from access to land.	3.36	3.25	0.40	3.31	Agreed
2	Poor knowledge and skills in ruminant animal	2.60	2.74	0.45	3.67	Agreed
3	Lack of adequate access to credit facilities	3.15	3.19	0.48	3.17	Agreed
4	Lack of adequate access to extension services.	2.90	2.88	0.53	2.89	Agreed
5	Poor facilities for husbandry and management of livestock	3.30	3.00	0.50	3.15	Agreed
6	Domestic responsibilities faced by women.	3.50	2.80	0.69	3.15	Agreed

Key:  $\bar{x}_1$  = Mean 1,  $\bar{x}_2$  = Means 2, **SD** = Standard Deviation,  $\bar{x}_g$  = Grand mean.

Data presented in Table 4 revealed that respondents mean ranges from 2.60 to 3.25 which indicate that respondents agreed to all the challenges faced in the production of ruminant animals. The standard deviation ranges from 0.40 to 0.69 which showed that respondents are too far from one another in their response.

#### 5. Discussion of Results

The result of the study in Table 1 showed that respondents required all management systems in ruminant animal production. The management systems are: provision of pens for ruminant production, trim hooves regularly to prevent over growth, foot root or lameness among others. The result in Table 1 is in agreement with findings of Ekele (2004) who found out that management system used in monogastric (pig) production involves good sanitation that prevents diseases in piggery pen. The findings were also in consonance with the finding of Ekele (2014). The author stressed that in sheep and goat production, management system involves good construction of paddock and provision of adequate roughages.

Findings from Table 2 revealed that respondent agreed to all the 6 items on the extent of milk production by ruminant animals. The findings is in agreement with study by Valdivia (2001) who posits that in some developing countries, farmers who keep ruminant could hardly manage them for increased milk production as a result of climate change and less roughage for feeding. The findings were also in line with the work of Shicai and Jie (2009). The author states that goat and sheep if not properly managed, produces less milk for human consumption.

The result of the study in Table 3 showed that women farmers required all the feeding procedure for ruminant animal's production. The feeding procedures are: feed ruminant animals with hay, silage or roughages, feed a mature cow of an average weight of about 300 to 400kg with about 150 to 250g Digestible crude protein (DCP) on daily basis, feed lacting cow with an additional 40 to 45g of DCP and about 1.2 – 1.3 Mcal of metabolizable energy amongst others. This is in line with the study by Grace (2007) that in recent years there has been a pronounced trend towards adapting intensive system of keeping cattle where animals are properly housed and fed. The author opined that enterprising individuals need to feed cattle on balance ration throughout the year to improve growth rate resulting to higher productivity. The result of the study in Table 4 revealed that respondents agreed on the challenges faced by women farmers in the production of ruminant animals. The challenges are: lack of adequate access to credit facilities, lack of adequate access to extension services, inadequate finance to run the enterprise amongst others. The findings are in consonance with the findings of Food and Agricultural Organization (2011) which reported that in developing countries, the challenges farmers encountered are usually that of lack of credit facilities and access to extension services.

## **6. Conclusion**

Women farmer in Benue State reared ruminant animals on a small scale basis to meet their immediate needs. The study has shown that there is need for management systems to be mastered; the extent of milk production by ruminant animals need improvement, the skill for procedures in feeding ruminant ought to be adequately mastered. Hence, women farmers in agriculture need knowledge and skills in order to improve ruminant animal production.

### **6.1 Recommendations**

Based on the findings, the following recommendations are made:

1. Extension agents should organize workshop for women farmers in the state in ruminant animal production.
2. Ministry of Agriculture should encourage women to participate in large ruminant keeping.
3. Women farmers should be trained in feed production for ruminant animals in Benue State.

4. Credit facilities and access to extension services should be made available to women farmers in Benue State.

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