NSAP 47th Annual Conference (JOS 2022) CONFERENCE PROCEEDINGS
THEME: SECURING ANIMAL AGRICULTURE AMIDST GLOBAL CHALLENGES

COMPARATIVE PROFITABILITY ASSESSMENT OF GOAT AND SHEEP PRODUCTION: ALTERNATIVE DECISION FOR SUSTAINABLE ECONOMIC RECOVERY IN PANKSHIN LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA

H. A. Danwanka[1], B. G. Gosup[2], S. N. Deshi[2], J. S. Datit[2], B. S. Dafur[3], H. G. Gowok[4]
[1]Department of Agricultural Economics and Extension, Abubakar Tafawa Balewa University, Bauchi, Nigeria.
[2]Department of Agricultural Science, Federal College of Education, Pankshin, Plateau State, Nigeria.
[3]Department of Animal Science, University of Jos, Nigeria.
School of Postgraduate Studies, Abubakar Tafawa Balewa University, Bauchi, Nigeria.
deshinengak1@gmail.com

ABSTRACT

The study examines comparative profitability assessment of goat and sheep production in Pankshin Local Government Area of Plateau State, Nigeria. Data was randomly collected from 128 respondents in four districts purposely selected, through administration of structured questionnaire. The data was analysed using discrete statistics and farm budget analysis. The result revealed that production and movement of the animals to the final consumer displayed a perfectly competitive structure where there were many producers and many buyers, no barrier to entry and exit, and prices were determined by haggling. Cost of production for goat and sheep in the study area were ₦87,000 and ₦79,000 with total revenue of ₦106,500 and ₦85,000 respectively. The difference in gross margin was ₦12,500 in favour of goat farmers. The returns on capital invested on goat and sheep were 2.24 and 0.08 with a difference of 2.16 in favour of goat breed. Based on the findings, it is concluded that the profitability indicators are in favour of goat production over sheep. However, other profitability indicators may favour sheep if government and other financial institutions will give assistance to goat and sheep farmers in the form of soft loans to increase their capital base for large scale production.

Keywords: Profitability, sustainable, economic recovery, production, gross margin.

INTRODUCTION

The economic wellbeing of rural farmers depends on urban population where high demand of rural products come from. This may also have differentiated effect on different household and income groups which tend to bring social inequalities in the distribution of wealth and income (Abbot and Makehem, 2009). According to Lawal-Adebowale (2012), sheep and goat distribution is skewed, with 70% of the total population concentrated in the Guinea Savannah and Sudan Savannah regions of the country. Rural livestock owners generally have few resources to invest in technologies and other advanced equipment that could maximize profitability. As rise in profitability would be a clear indicator of success. The tangible benefits are regular cash income, meat, milk and manure, and the intangible benefit is the role of small ruminants as insurance in case of emergency (Bayer, 2013).Livestock farmers in rural areas are small herders and have adopted a low level of production technology. They have suffered from successive weak production seasons, causing a fragile economic status. But, there is always room for improving herd economic efficiency and productivity (Hamidu and Kutus, 1999). Overgrazing and herding practices have great impact on the vegetation and biodiversity of the environment. Poor management quality in pastures and herd is reflected in the herder revenue and production costs. Apart from that, record has it that herds suffered from poor feed management and weak veterinarian services resulting to poor revenue and low productivity forcing herders to intensify grazing in order to reduce cost of feed which is detrimental to rehabilitative vegetation and restore biodiversity (Alkhalidi *et al.,* 2013). Pankshin Local Government Area suffers from excessive grazing pressure which combined with drought leads to the loss of desirable returning

grasses and shrubs. This causes increased in soil erosion and reduced availability of grazing resources (Keson, 2015). This prompt the researcher to compare the profitability assessment of goat and sheep production in the study area so as to determine the market structure for goat and sheep, examine the production systems and herd sizes adopted by herders for goat and sheep in the study area, determine the most profitable production enterprise between goat and sheep, and identify the constraints for goat and sheep production in the study area.

METHODOLOGY

The Study Area

Pankshin is a local government area in Plateau State, Nigeria. It has a land area of 1,524km^2 and a population of 191,685 (NPC, 2006). Pankshin has a cold climate and mild altitude location of $9^0$20`0``N and $9^0$27`0``E (Deshi, 2015). The Local Government Area's economy is mainly agricultural and the main cash crop and food crops grown are beans, millet, rice, Irish potatoes, maize and vegetables. The people also undertake livestock farming and rear cattle, sheep, goats, pigs, poultry and fish farming. It is not a matter of wonder to say that agricultural products that are bound in the Local Government Area attract buyers from far and near. Mondays in Pankshin are specifically for trading – buying and selling, hence the name "Monday Market" as traders, merchants and people come to buy and sell.

Sampling Procedure and Data Collection

The population for the study was goat and sheep farmers in Pankshin Local Government Area of Plateau State, Nigeria. Purposive sampling was employed in selecting four districts (Pankshin, Kadung, Chip and Tal). Thirty-two (32) respondents were randomly selected from each district, making a total of one hundred and twenty eight (128) farmers. Data was collected from sixty-four (64) herders each for goat and sheep using structured questionnaire. Information gathered were organization of goat and sheep market, production system and farm size, costs and returns on production and constraints in production of small ruminants. Statistical tools of discrete and farm budget were used to analyse the data.

The model specification used for the analysis was mean of group data. While the Total Cost (TC) Total Revenue (TR) and Return on Naira Invested (RNI) were used to determine the profitability of goat and sheep production budget model.

RESULTS AND DISCUSSION

The characteristics of the organization of the market which influences the nature of pricing and competition in the goat and sheep market were examined. Each seller and buyer acts like a competitor to one another and thus, making perfectly competitive. Results from table 1 revealed that average number of goat and sheep offered for sale were 30 (46.88%) and 35 (54.69%) respectively. Similarly, the purchase were 28 (43.75%) and 30 (46.88%). Potential sellers need information about prices at different market time, while buyers need information about availability of goat and sheep in different market locations. The market structure was such that, there is free entry and free exit of participants and prices were determined by haggling. Both goat and sheep were differentiated by the buyers through visual estimate of the weights, palpation of the animals on the back side, age, gender, size and skin coat. This finding is contrary to the submission of Baruwa (2013) who reported that product differentiation of goat and sheep market in Kerang were through sex and colour of the skin only.

Table 2 reveals that returns on capital invested on goat and sheep were 2.24 and 0.08 with a difference of 2.16. This implies that goat production is more revenue attractive despite the commercial status accorded to sheep in the study area. This finding is contrary to the report of Abdullahi *et al.* (2018) who reported that returns in small ruminant animals is higher in sheep enterprises than goat in Gombe metropolis, Gombe State, Nigeria.

Table 1: Number of goat and sheep offered for sale.

Goat Number	Frequency	Percentage (%)	Sheep Number	Frequency	Percentage (%)
1 to10	15	23.44	11 to 20	20	31.25
11 to 20	30	46.88	21 to 30	35	54.69
21 to 30	10	15.62	31 to 40	5	7.81
31 to 40	9	14.06	41 to 50	4	6.25
Total	**64**	**100**		**64**	**100**
Number of goat and sheep sold					
Goat Number	**Frequency**	**Percentage (%)**	**Sheep Number**	**Frequency**	**Percentage (%)**
1 to 10	14	21.88	11 to 20	30	46.88
11 to 20	28	43.75	21 to 30	20	31.25
21 to 30	12	18.75	31 to 40	10	15.62
31 to 40	10	15.62	41 to 50	4	6.25
Total	**64**	**100**		**64**	**100**

Source: Field Survey, 2021.

Results in table 3 shows that inadequate capital (75.56%) hinders farmers from getting the necessary resources and technologies which could assist them to achieve higher production efficiency. This is similar to the submission of Abdullahi *et al*. (2018) who reported that inadequate capital as one of the major problems facing Small Scale ruminant production enterprises in Gombe State, Nigeria. Also, seasonal variation in prices (66.41%) did not offer sufficient incentives for sufficient increase in herd size. This findings is similar to that of Baruwa (2013) who asserted that frequent price variation of farm inputs/produce is a major concern to producers, marketers and consumers of goat and sheep in Plateau State, Nigeria. Also, 62.50% of the producers of Small Scale ruminants had complained of transport-related problems. In some cases, there are no sufficient vehicles to carry animals from the farms to the rural-markets. While, in some cases, no good road network which sometimes increase transportation costs. Lack of modern facilities and inadequate grazing land constitute 58.59% and 57.81% respectively.

CONCLUSION

Based on the results obtained from this study, it could be concluded that, although profitability indicators are in favour of goat production over sheep, other economic indicators could still favour sheep production. This outcome presents a production decision to farmers in their choice of enterprise. However, since production decision on any livestock business is made principally on overall projected profile and profitability indicators preferred goat production, farmers in the study area may go for goat production than sheep. It is recommended that Government and other financial institutions should give livestock farmers' financial assistance in the form of soft loans. This will help increase the capital base of the individual herders and also attract new entrants. Also,

it will enable farmers to embark on large scale production that will close the wide gap between demand and supply

Table 2: Profitable of goat and sheep.

Profitability Component	Goat (₦)	Sheep (₦)	Difference
Gross Margin	19,000	6,500	12,500
Rate of Return (RR)	2.24	0.08	2.16

Source: Field Survey, 2021.

Table 3: Constraints on production of goat and sheep in Pankshin L.G.A.

Constraints	Frequencies	Percentage	Ranking
Inadequate capital	98	76.56	1st
Variation in prices	85	66.41	2nd
Problems of transportation	80	62.50	3rd
Lack of modern facilities	75	58.59	4th
Inadequate grazing land	74	57.81	5th

Source: Field Survey, 2021.

REFERENCES

Abdullahi, S., Yau, A., Kubia, H., Mohammed, E. & Shaibu, Y. (2018). Socio-economic determinants and constraints to small scale sheep marketing in Gombe metropolis, Gombe State, Nigeria. *Agriculture and Current Researcher*, *3*(2), 25-51.

Al-Khalidi, K. M., Alassaf, A. A., Al-shudiesfat, M. F. & Al-Tabini, R. J. (2013). Economic performance of small ruminant production in a protected area: A case study from Tell Ar-Rumman, a Mediterranean ecosystem in Jordan. *Agricultural and Food Economics, 1*(1), 1-8. Doi: 10.1186/2193-7532-1-8

Baruwa, O. L. (2013). Empirical analysis of costs and returns to goat production under tropical conditions. *Journal of Livestock Science, 40*(1), 44-50.

Bayer, W. (2013). Traditional small ruminant production in the sub-humid zone of Nigeria. *Journal of Livestock Science*, *40*(1), 55-75.

Deshi, S. N. (2015). *Effectiveness of five selected plants with naturally occurring antifungal bioactive agents for the control of late blights of potato (Solanum tuberosum).* Ph.D Thesis submitted to School of Postgraduate Studies. International University of Bamenda – Cameroon, Central Africa. Pp. 189.

Hamidu, B. A. & Kutus, J. (1999). Economics and profitability of sheep and goat production in Bauchi State, Nigeria. *Journal of Agriculture, 63*(3), 181-191.

Keson, G. B. (2015). Socio-economic factors affecting production of small ruminants in Nasarawa State, Nigeria. *Journal of Science and Food Technology, 9*(3), 48-60.

Lawal-Adebowale, O. A. (2012). *Dynamics of ruminant livestock management in the context of the Nigerian agricultural system. Livestock Production*: Intech-Open Access Book, doi:10.5772/52923