SUSTAINING AGRICULTURAL GROWTH TO MEET NATIONAL ECONOMIC DEVELOPMENT GOAL

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Data Analysis

The data were analyzed using descriptive statistics, farm budgeting and the production function approach. Descriptive statistics was used to describe the socio-economic characteristics of the farmers. The farm budgeting technique was used to analyze the profitability of the enterprises. The marginal productivities the various inputs used in sheep and goat used were determined by estimating a production function using ordinary least square (OLS) multiple regression analytical model which is specified in the implicit form as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, e). \quad (1)$$

Where

Y = Revenue (Annual income from sheep and goat)

X_1 = Feed cost (₦)

X_2 = Labour cost (₦)

X_3 = Medication (₦)

X_4 = Other costs (₦).

X_5 = Fixed cost (initial capital invested in ₦)

e = Error term

Data were fitted into equation (1) for each of the following four functional forms namely; linear, Double-log, Exponential and semi-logarithmic functional forms. the linear functional form gave the equation of best fit based on the normal economic, econometrics and statistical criteria.

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

The result indicated that 83.30% of the sampled farmers are male, while the remaining 16.70% are females. About 43.30% of the respondent had quaranic education. The average age of the sampled farmers and years of farming experience are 35 and 20 years respectively. The average household size was eight, while most farmers (42.20%) had a flock size range between 11 to 15. All the respondents employed only family labour in managing their enterprises. Most of the farmers either purchased or inherited their flock. The result further indicated that the majority of the farmers (83.30%) adopted the extensive system of management. This is in agreement with findings of (Ayoade *et al*, 1993, ; Abubakar *et al*, 2000, ; Jirgi and Tanko, 2008). Under the extensive system of management, animals are kept either in huts or open shade, this exposes the animals to unfavourable conditions which leads to disease infection, hence low productivity.

Costs and Returns

The profitability of any business can be deduced from the relationship between the cost incurred in running the farm business and the returns accruing to it (Adegeye and Dittoh 1985). The costs and returns associated with small ruminant production in the study area is presented in Table1.

The result of the farm budgeting analysis revealed that the fixed cost constituted 30.23% for sheep and 25.30% for goats of the total cost of production of small ruminant enterprise. Fixed capital accounted for 30.43% and 44.41% for sheep and goat respectively. The result showed that a typical farmer realized a gross margin of ₦153, 597.82 and ₦ 127,900.13 for sheep and goat respectively. The net farm income for sheep was ₦ 46,462.82 while that of goat was ₦ 31,366.13. The result showed that farmers realized profits, however profit can be enhanced if they improve on the management practices.

Production Function Analysis

The result in table2 indicated that linear equation form is the lead equation, which was used for that analysis. The adjusted R^2 value was 0.829 which implies that about 82.9% of the variation in income (Y), is explained by the input variables X_1 to X_5 (feed cost, labour cost, medical cost, other inputs cost and fixed cost) included in the model, while the remaining 17.1% is as a result of factors not included in the model. the variables feed cost, other input cost and fixed cost were significant at 1% while labour cost and medical cost were significant at 5% and 10% respectively. The coefficients of all the variables included in the model are positive implying that 1% increase in any of the variable holding others constant will lead to a resultant increase in the income of the farmer by the corresponding coefficient values of the variables.

Allocative Efficiency

A resource in (input) is considered to be mostly efficiently utilized if its Marginal Value Product (MVP) is just sufficient to offset its Marginal Factor Cost (MFC). the equality of MVP to MFC is the basic condition that must be satisfied to obtain the most efficient use of resources for productivity(Kay, 1981). The resource-use efficiency indices in small ruminant production in the survey a are presented in table3. The result in table 3 indicates that all the resources used in small ruminant production were underutilized. Small ruminant producers can increase their profit by increasing the use of these resources. The farmers should be encouraged to form cooperative in order to pool more resources for increased small ruminant production in the study area.

CONCLUSION RECOMMENDATIONS

The study examined the economic analysis of small ruminant production in Bosso local Government Area of Niger State. The study revealed that feed cost, labour cost, medical cost, other inputs and fixed cost are the major variables which significantly explain changes in income of small ruminant farmers. The allocative efficiency of all the resources were under-utilized. Thus, farmers should increase the use of these resources in order to enhance profit. This can be achieved by obtaining loans from agricultural banks and by encouraging farmers in the study area to form cooperative.

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Table1: Costs and Returns of Small ruminants production in Bosso local Government Areas, Niger State, 2007

Items	Sheep		Goat	
	Average Value (N)	Percentage	Average Value (N)	Percentage
Costs				
Variable Costs				
Labour	93,080.00	26.44	30,700.45	14.12
Medical Cost	19,750.00	5.61	14,900.00	6.85
Feed Cost	106,430.68	30.23	55,000.23	25.3
Other Inputs Costs	25,675.50	7.29	20,250.15	9.32
Av. Total Variable Cost (ATVC)	244,936.18		120,850.83	
Fixed Cost (FC)	107,135.00	30.43	96, 534.00	44.41
Capital Investment				
Total Fixed Cost (TFC)	107,135.00		96, 534.00	
Av. Total Cost (ATC)	352, 071.18		217,384.83	
Av. Total Revenue(ATR)	398,534.00		248,750	
Gross Margin (GM)= ATR – ATVC	153,597.82		127, 900.13	
Net Farm Income (NFI) = ATR – ATC	46,462.82		31, 366.13	

Table 2: Estimated linear production function (lead equation)

Variables	Regression Coefficients	T-values
Constant		
Feed Cost (X_1)	1.553	7.313
Labour Cost (X_2)	0.755	3.132**
Medical Cost (X_3)	0.108	*397.313
Other Input Cost (X_4)	1.001	3.520***
Fixed Cost (X_5)	1.287	2.432**
R^2	0.829	1.951*
F Ratio	81.387***	3.894***
		4.096***

Source: Field Survey, 2007, *** = Significant at 1% level of probability, ** = Significant at 5% level of probability
* = Significant at 10% level of probability

Table3: Estimated efficiency Ratio (r)

Variables	MVP	MFC	Efficiency ratio
Feed Cost (X_1)	10,327.45	1393.67	7.41
Labour Cost (X_2)	5,020.75	1255.22	3.999
Other Input Cost (X_4)	6,656.65	1579.5	4.214
Fixed Cost (X_5)	8558.55	1095.28	7.814

Source: field survey, 2007