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## DETERMINANTS OF RABBIT KEEPING IN SOUTH WESTERN NIGERIA

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### ABSTRACT

The study examined the determinants of rabbit keeping in the South Western Nigeria. Multi-stage sampling technique was adopted in selecting 150 rabbit keepers. The study made use of primary data obtained through structured questionnaire supplemented with oral discussion. Data covering socio-economic characteristics such as age, farm size, rabbit rearing experience, *et cetera*, were elicited from the respondents. Data collected were analysed through the use of descriptive statistical tools such as means and percentages as well as multiple regression technique of analysis.

The results showed that 58% of the rabbit farmers were within the age bracket of 31 and 40 years with the mean age of 38 years. 66% used the green leaves alone to feed their rabbits. The majority (70%) of the farmers were males while the remaining 30% were females. 62% of the respondents had formal education, while 38% did not attend any school. About 70% of the farmers had household size greater than five with the mean of six. None of the farmers took rabbit farming as full time job. Those that kept below 31 rabbits were 71%. About 66% of the respondents were never visited by extension agents. But, 80% belonged to at least a cooperative society. In rearing rabbits, the mean experience was 6 years. The majority (80%) were faced mainly with marketing problem. The major determinants of the number of rabbits reared were, age of the respondents( $X_1$ ), rearing experience( $X_2$ ), annual net farm income( $X_3$ ), and accessibility to loan( $X_5$ ). It was recommended that more awareness on rabbit production and marketing should be created in order to increase the respondents' income.

**Keywords:** Consumption, Farmers, Labour, Production, Rearing.

### INTRODUCTION

In the wake of the deterioration of our planet's natural resources, the worsening global economy, and the spread of Avian influenza, the role of the rabbit- to provide a regular supply of high quality protein is recognized as a major livestock species in many parts of the world especially in the tropical region(Guaay, 2011). The domestication of the major livestock species (cattle, sheep, etc) is lost in the dawn of prehistory. But rabbit domestication dates back no further than the present millennium. Beginning in the late nineteenth century and picking up speed in the twentieth, hutch rearing led to rabbit population explosion made possible by the selection, protection and multiplication of breeds and mutants unadapted to the wild.

In Sub-Saharan Africa, Nigeria and Ghana are the two main producers of rabbit. In these countries most rabbitries are family-owned, with part of the output for market. For rabbit, the actual volume of international trade is quite small – about 6 to 7 percent of world output. It has been argued that rabbit meat production is generally for domestic consumption. Rabbit meat consumption is much easier to develop where people are already used to eating widely different kinds of meat, as from hunting. According to FAO (1982), survey of 64 developing countries reporting on the development potential for rabbit production in their countries, 70 percent thought it feasible and 30 percent considered that social customs, religion and other reasons would not favour it. Therefore, the objectives of this paper were to describe socio-economic characteristics of the rabbit rearers as well as ascertaining which of these characteristics significantly influence the rearing of rabbits. Also the problems militating against rabbit keeping in the study area would be investigated.

## MATERIALS AND METHODS

The study was conducted in South-western area of Nigeria. In selecting one hundred and fifty rabbit keepers, multi-stage sampling technique was adopted. The last stage involved random selection of the respondents from the list of the rabbit keepers earlier compiled in the region. The study used primary data obtained through structured questionnaire. This was supplemented with oral discussion. Data covering socio-economic characteristics such as age, farm size, rearing experience, household size, income earned, et cetera were elicited from the respondents. Data collected were analysed through the use of descriptive statistical tools such as means and percentages as well as multiple regression analysis. The estimated model for determinants of rabbit keeping is implicitly stated as:

$$Y_i = f(X_1, X_2, X_3, X_4, X_5, X_6, U_i) \dots \dots \dots (1)$$

Where Y, number of rabbit kept;  $X_1$ , age of respondents (years);  $X_2$ , rearing experience(years);  $X_3$ , annual net farm income(Naira);  $X_4$ , educational level(years);  $X_5$ , household size(number);  $X_6$ , accessibility to loan(access=1, no access=0);and  $U_i$ , error term. Four functional forms of the equation were tried and the one producing the best fit was chosen on the basis of econometric criteria- coefficient of multiple determinations ( $R^2$ ) and the number of variables that were significant. The functional forms tried are stated explicitly as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e_i \dots \dots (2) \text{Linear form}$$

$$Y_i = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6 + e_i \dots (3) \text{Semi - log form}$$

$$\ln Y_i = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6 + e_i \dots (4) \text{Log - log form}$$

$$\ln Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e_i \dots \dots (5) \text{Exponential form}$$

where:  $\ln \square$ , is the natural logarithms;  $\beta_0 \dots \beta_6$ , the estimated coefficients and  $e_i$ , estimated error term . Other variables are as earlier defined.

## RESULTS AND DISCUSSION

Table 1 shows that 58 percent of the respondents were within the age bracket of 31 and 40 years with the mean age being 38 years. The majority, 86 percent were less than 41 years while just 14 percent were above 40 years of age. This shows that rabbit rearers are young and are in their productive age. Also, it is an indication that the respondents will have enough strength and energy to cut green fodder needed to feed the rabbits. In the study area, rabbits are fed mainly with green fodder. 66 percent of the farmers used green leaves alone. The plants include; *Aspilia Africana* and *Americana*, *Centrosema* spp, *Tridax* spp, *Emilia* spp, *Calopogonium* spp and Sweet potatoes leaves. The keepers that use green leaves alone feed the young rabbits (fryers) with *Aspilia Africana* and *Tridax* spp. These plants have low water content. In addition, only 7 percent of the farmers used concentrate alone to feed their rabbits. Most of the concentrates are in form of poultry growers mash. Atimes poultry growers' mashes in form of pellets are used. In the study area, rabbit pellets are not readily available. Also, 27 percent of the rabbit rearers used both concentrates and green leaves. Concentrates are fed to the pregnant does and fryers while the rest are fed with green vegetables. Due to lack of fund, most of the farmers could not use concentrate.

According to table 1, the majority, 70 percent, of the farmers were males while the remaining 30 percent were females. This is an indication that men are more involved in the rearing of rabbits. Also, 62 percent of the respondents interviewed had formal education while 38 percent did not attend any school. This shows that, the majority could read and write. Moreover, about 70 percent of the farmers had household size greater than 5 with the mean of 6 members while 30 percent of them had 5 members or less in their households. This is an indication of large family, and it is required in cutting the green vegetable for the rabbits. Furthermore, table 1 indicates that none of the respondents was a full time rabbit keeper. Farm size measured in terms of number of rabbits reared showed that the majority, 71 percent of the farmers kept between 2 and 30 rabbits with the mean of 21 rabbits. This indicates that most of the respondents are small scale farmers and they would not be able to enjoy the economies of large scale production. Also, the majority (66%) were never visited by extension agents. These people

are needed to transfer innovations to farmers.

In addition, table 1 shows that 80 percent of the rabbit keepers belonged to at least one cooperative society. These societies have been of help to the farmers because most of the time, farm inputs are sold to the farmers at highly subsidised prices. Also, the societies are links through which farmers' access agricultural loans.

According to table 1, the majority (56%) of the respondents had between 6 and 10 years of experience in rearing rabbits while the mean was 6 years. The number of years a farmer has spent in the farming activities could give an indication of the practical knowledge which has been acquired. 80 percent indicated the problem of marketing as the main constraint limiting the expansion of their rabbit farms. Other problems listed include, finance, diseases and theft (Table 1).

**Table 1:** Summary statistic of selected socio-economic characteristics of rabbit keepers

Variable	Frequency	Percentage	Variables	Frequency	Percentage
<b>Age (years)</b>			<b>Rabbits reared (number)</b>		
≤20	20	13	≤10	26	17
21-30	22	15	11-20	20	14
31-40	87	58	21-30	60	40
41-50	15	10	31-40	23	15
51-60	4	3	41-50	8	5
>60	2	1	>50	13	9
<b>Type of feed</b>			<b>Extension services</b>		
Green leaves alone	100	66	0	99	66
Concentrate alone	10	7	1-2	32	21
Green leaves & Concentrate	40	27	3-4	15	10
<b>Gender</b>			>4	4	3
Male	105	70	<b>cooperative society</b>		
Female	45	30	Yes	120	80
<b>Educational level (years)</b>			No	30	20
0	57	38	<b>Rabbit rearing Experience (years)</b>		
1-6	30	20	1-5	40	27
7-12	45	30	6-10	84	56
> 12	18	12	11-15	12	8
<b>Household size</b>			>15	14	9
<2	15	10	<b>Problem</b>		
2-5	30	20	Marketing	120	80
>5	105	70	Finance	23	16
<b>Rabbit farming nature</b>			Diseases	5	3
Full Time	0	0	Theft	2	1
Part Time	150	100			

Sources: Field survey, 2012

### Factor influencing the number of rabbits reared

Results of multiple regression analysis for all the four functional forms tried are presented in table 2. Log-log functional form was chosen as the lead equation based on the high value of coefficient of multiple determination ( $R^2$ ) and more significant coefficients. The estimated  $R^2$  indicated that the included independent variables in the model explained about 74 percent in the variation of the dependent variable. Four variables, age of respondents( $X_1$ ), rearing experience( $X_2$ ), annual net farm income( $X_3$ ) and accessibility to loan( $X_6$ ) were significantly different from zero while variables, educational level( $X_4$ ) and household size( $X_5$ ) were not significant at 1%, 5% or 10% level of significance. Variables  $X_1$  and  $X_2$  were significant at 1 percent while  $X_3$  and  $X_6$  were significant at 5 percent and 10 percent respectively. This shows that the major determinants of the number of rabbits on the farms of the farmers were, age of the respondent, farming experience, annual net farm income and accessibility to loan.

**Table 2:** Regression results of determinants of rabbit rearing in the study area

Variable	Linear	Log-log	Exponential	Semi-log
Constant	-0.737*** (2.122)	1.083 (0.974)	-4.152 (1.801)	2.134* (5.371)
Age of Respondent(Yrs)	-0.042** (1.977)	-0.856* (2.940)	0.956*** (1.680)	0.248 (1.206)
Rearing Experience(Yrs)	0.070 (0.926)	0.734* (3.471)	0.144** (1.991)	0.946** (2.001)
Annual Net Farm Income(¥)	0.066 (0.996)	0.893*** (1.981)	-0.342 (1.326)	0.671* (3.560)
Educational Level(Yrs)	0.910 (1.341)	0.894 (1.346)	0.744 (1.547)	0.968 (1.251)
Household Size	0.843 (1.246)	-0.652 (1.546)	0.937 (1.473)	2.347 (1.610)
Accessibility to Loan	0.125 (1.567)	0.602*** (1.741)	0.357 (0.874)	2.611 (0.318)
R <sup>2</sup>	0.51	0.74	0.47	0.54
R <sup>-2</sup>	0.49	0.72	0.40	0.50
F-value	4.613	3.431	4.533	5.765

\*, \*\*and\*\*\*denote significance of coefficient at 1,5,and10 percent respectively. Figures in parentheses are the t-values.

In addition, all the estimated coefficients except  $X_1$  and  $X_5$  had positive signs which indicated that an increase in the quantity of these variables would lead to an increase in the number of rabbits expected to be reared by the farmers. The coefficient of  $X_1$  and  $X_5$  that had negative sign implied that an increase in these variables would lead to a decrease in the number of rabbits reared.

### CONCLUSION AND RECOMMENDATIONS

The results of the study showed that majority of the rabbit keepers surveyed were young(86%), used green leaves alone to feed their rabbits(66%), males(70%), educated(62%), had large household size(70%), took the rearing as part time business(100%), operated on small scale(71%), never visited by extension workers(66%), belonged to at least one cooperative society(80%), and faced with marketing problem(80%). Also, the major determinants of rabbit rearing were the respondent's age, rearing experience, accessibility to loan and annual net farm income.

Based on the results obtained in the study, it is recommended that loan should be made available at affordable interest rate to young and dynamic farmers who are ready to rear rabbits on large scale. Also, extension workers should visit farmers rearing rabbits in order to encourage and carry information to them on how and where rabbit could be reared and sold. There should be an organised market for the sales of rabbit's products. Rabbit farmers should be encouraged to own a slaughtering house where consumers could purchase rabbit meat. Lastly, in order to increase the farmers' income, the consumers should be sensitised about the importance of eating rabbit meat.

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