



## Animal Protein Demand and Profitability of *Numida meleagris* (Guinea-Fowl) A Wild Bird In Nigeria

Muhammed Shittu LAWAL

Department of Forestry, Fisheries and Wildlife, Faculty of Agriculture and Agricultural Technology, Kano University of Science and Technology Wudil, Nigeria  
[daprinx1@gmail.com](mailto:daprinx1@gmail.com) 08108462642 & 08052336591

### Abstract

Due to the increase in global demand for cheap and nutritionally rich animal protein which the present poultry farms cannot meet research into profitability of domesticating guinea-fowl was conducted. Twenty (20) subsistent local investors who are consistent in domesticated guinea-fowl rearing for minimum consecutive period of two years were studied from the list of 32 owners randomly selected within Kano metropolis. This sample forms 62.5% of the identified population. Expenses incurred by each investor per year were determined and the price of egg and adult guinea-fowl were gotten from local market. Close ended questionnaire was used and profitability analysis was done through undiscounted economic analysis of Rate of Return on Investment (RORI). Also, challenges facing the investor were identified. All investments covered are worthwhile for each year analysed. With the least 23.57% RORI Rate of Return on Investment to 79.71% the highest value on investment. Investment in domestic guinea-fowl can be started with ₦3,155:00 showing that the business is at micro level. Return exceeds expense for the period the fowl has been raised. The identified problems are: Poor financial background 75.0%, lack of technical know-how 20.0%, and poor breeding stocks 5.0%. Despite its worthwhile, commercial investment in the wild bird Guinea-fowl production has not started in Kano. Thus, there should be demonstration farms in designated centres across the state for public training. Also, financial support must be provided for participants because the programme is still at its infancy stage.

**Keyword:** Rate of Return on Investment, profitability, guinea-fowl, commercialization

### Introduction

The nation call for increase protein production from animal sources as a result of population demand for more quality protein of animal origin is tasking. Egg and meat production from poultry farming today could hardly meet the daily consumption requirement. Raising eggs and meat from domesticated wild bird is not a novel phenomenon, however; the practice of this is not given a priority in Nigeria. The northern part of the country is endemic to guinea fowl more than any other part of the country. It is therefore unusual not to see guinea-fowl roaming some part of Kano state as wild metropolitan bird. The acceptance of this bird as source of food can be explained with the display of the eggs and meat for sale in many cities and rural markets across the state. In contrast to the rapid population growth in Nigeria, food production has not followed suit over the last 50 years (Wiggins and Keats, 2013). To establish sustainable food production, more and alternative sources of food must be exploited from natural wild. The egg production and meat from convectional poultry farming is insufficient compared to population needs. The credible alternative which has not been given priority is domestic guinea-fowl. People have for long known guinea-fowl as good source of protein, yet little exploitation for commercial production has been undertaken. Food production plays a key role for growth and development in most African countries (Larsen *et al.*, 2009). Even though there is plenty of meat and egg supply from commercial poultry farmers, the contribution from other sources to this will not be a wasted effort. Guinea-fowl is native to Africa especially the Guinea savannah belt. The general name of this wild bird is guinea-fowl and the family nomenclature is *Numididae*. The domesticated guinea-fowl are from helmeted species, *Numida meleagris*. Guinea-fowl meat is lean and rich in essential fatty

acids. Guinea-fowls have a high yield of 80% after processing, with excellent meat to bone ratio (Chepkemoi, 2016). Massive collection of both adult domesticated guinea-fowl and their eggs sourced from different hamlets across Kano state are seasonally sold and transported to Southern part Nigeria.

In South Africa too, flocks of guinea-fowl have flourished in recent years in the Southern Suburbs of Cape Town, where they seem to have adapted remarkably well (Nicely 2013). Guinea-fowl is widely distributed in Africa and the subsistent husbandry practice is on the increase in Nigeria. Social acceptability studies on this species have shown promises of providing another quick source of most needed protein supplement (Tewe *et al*, 1983). Under captivity the guinea-fowl has shown an improvement on its egg-laying capacity from 50-100 eggs per season to about 165-185 eggs in 38 weeks and the bird is harder and more diseases resistant to poultry chicken (Ayeni, 1983). In the wild, they eat a wide variety of feedstuffs but most important are weeds, grasses, insects and waste grains (Adeyemo and Oyejola, 2004). Captivity rearing of the bird for profitable sales involves feeding them on finished poultry feeds for now in Nigeria.

Presently, there are no formulated rations for farmed guinea-fowl in Nigeria as the industry is evolving. As a result, adult guinea-fowl are fed commercial/finished feeds Starter feeds is given to keets from day old to about a month and grower march to table size for meat production. The feathers of domestic guinea-fowl are also often sought for use in arts and crafts in such items as hats, dreams catchers, and decorative gourds. The aim of this research is to evaluate profitability of investment in domestic Guinea-fowl which is a wild bird.

## **Materials and Methods**

### **The Study Area**

This study was conducted in Kano metropolitan, Kano state of Nigeria. Kano state located around the latitude of 11.7574, with longitude of 8.6601 respectively, with total number of forty four local governments council and is divided into three senatorial districts. Kano state has population of 9,383,682 as at 2006 population census and estimate by 2011 is about 11,000,000 million people, with population density of 470 people per kilometer square.

### **Methodology of Data Collection**

Close ended structured questionnaire was used for twenty (20) subsistent local investors who are consistent in domesticated guinea-fowl rearing for at least minimum of two consecutive years from the list of 32 micro scale domesticated guinea-fowl owners identified in Kano metropolitan. This sample forms 62.5% of the identified total population of domesticated guinea-fowl farmers. All expenses incurred per year in term of maintaining the bird were taken into consideration including the feeding and housing cost where applicable. Price of egg and adult domesticated guinea-fowl were gotten from local market. Profitability analysis was done through undiscounted economic analysis of Rate of Return on Investment (RORI). Also, challenges facing the investor were identified. Data collected from the field were collated; classified and presented in the form of tables.

### **Analytical Technique**

Rate of Return on Investments (RORI)

$$TR/TC \times 100$$

TR = total revenue from services rendered.

TC = total cost of production.

## Results and Discussion

The results in Table 1 on the gender distribution of the domesticated guinea-fowl farmers' show that 90.0% are males and 10.0% are females. Two reasons could be adduced to this, one; the fact that women are not actively involved in business of this nature because of traditional and religious belief in the North. Also, poultry and animal husbandry activities are more embraced by men in the northern region because it is arduous.

**Table 1: Gender Representation of Domesticated Guinea-fowl farmers**

Gender	Frequency	Percent
Female	2	10.0
Male	18	90.0
Total	20	100.0

**Table 2: Age Range of the Investors**

Age (Years)	Frequency	Percent
18-30	13	65.0
31-42	5	25.0
43years & above	2	10.0
Total	20	100.0

This result indicated that more young people of age 18-30 are given investment in domesticated guinea-fowl trial (65.0%). This age range is the most populous of the respondents. Also, respondents with 43 years and above constitute 10.0% of the sample indicating that all age group could not be a barrier to investment in the farming (Table 2).

**Table 3: Education Background of the Investors**

Status	Frequency	Percent
Illiterate	12	60.0
Primary	5	25.0
Secondary	3	15.0
Total	20	100.0

Results in Table 3 showed that most investors in domesticated guinea-fowl in Kano Metropolitan do not possess any formal educational certificate (60.0%). The highest certificate possesses by the respondents is secondary school certificate (15.0%). There are thus some elements of the respondents who have Western education. On oral interview with regards to motive of going into the business all the respondents affirms that profit from sales of egg and meat production is the reason. On further probing of respondents on how they acquired confidence before investing in the business, all said it is a trial and error. This simply means government is not encouraging people despite the endemic nature of the wild bird in kano state.

**Table 4: Problems facing Respondents in Domesticated Guinea-fowl farming in Kano**

Items	Frequency	Percent
Meagre financial background	15	75.0
Lack of technical know-how	4	20.0
Poor local breeding stocks	1	5.0
Total	20	100.0

Table 4, promptly addressed the challenges confronting the respondents in the course of investing in the bird. 75.0% of the respondents agreed that poor financial base is their undo. All the domesticated guinea-fowl farmers are micro scale farmers. Capital plays laudable roles in success of business. The place of fund in every enterprise cannot be taken for granted. There are several roles that adequate financial base can play especially in an upcoming business. It could be an encouraging or discouraging factor depending on easy or difficulty of accessing the fund. Lack of technical know-how (20.0%) in transforming the business into next level of business scale is another problems faced by the farmers. The basic knowledge required in the proper management of the wild bird are not readily available to them know, possibly because of poor research on this wild species in Nigeria. As at now in the country, there is no improve local breeding stock of the guinea-fowl, so there is reduced yield from the domesticated guinea-fowl. There is no single government support and also no pronounced government policy for development of this venture. This call for involvement of Wildlife professionals who are best equipped to suggest species requirement in the domestication state based on the ecological requirement of the bird, growth rate and suitability of species for the objectives of resound profitability.

**Table 5: Proximate Composition of Bird Meat in Kenya**

Parameters	Indigenous chicken	Commercial chicken	Domestic guinea-fowl	Commercial quail	wild quail
Moisture	69.56±1.15b	73.54±0.74a	74.89±0.59a	73.51±1.04a	65.09±1.15c
Ash	0.93±0.09ab	0.68±0.06b	1.00±0.07a	0.94±0.14ab	1.03±0.16a
Fat	3.12±0.51a	3.27±0.22a	2.41±0.23a	4.21±0.44a	2.69±0.47a
Protein	18.15±0.81a	19.70±0.25a	19.48±1.43a	18.39±0.64a	25.50±1.59b
Carbohydrate	8.250±2.17a	2.57±0.77b	2.978±1.48b	2.95±1.50b	5.69±32.37ab

Source: (Chepkemoi, 2016)

This is nutrient composition and values of domestic guinea-fowl compare to other birds. From Table 5, it is clear that domestic guinea-fowl compete favourably well with commercial chicken others called poultry birds which are genetically modified for high yield performance. This result shows that there is no significant difference in protein value of commercial poultry bird and domesticated guinea-fowl. With the development of improved breeds and varieties in guinea-fowl like that of modified chicken, there is tendency for better protein quality than the chicken.

### **Profitability of Investment in Domestic Guinea-fowl business in Kano**

From table 6, the economic performance of micro/small scale investment in domesticated guinea-fowl were carried out and recorded for each of the identified twenty (20) regular investors in Kano city. The result is as follow:

The economic analysis of profitability of domestic guinea-fowl shows all investments are profitable. All investments covered by the research had positive profitability for each year analysed. With the least 23.57% rate of return on investment to 79.71% the highest value on investment; domestic guinea-fowl rearing is a business with multiple gains. Looking through all the firms the starting capital is very low, thus it is a business that who can start with little capital and see it growing. The analysis of Internal Rate of Return shows that all investments have values greater at positive end. This values established investments to be worthwhile. Based on this premise, return on investing in domestic guinea-fowl exceeds expenses greatly for the period the fowl has been raised.

Improve profitability will be possible if the farmers start with good structured plan to include creation of a mission and vision statement, and development of goals and objectives of the business at onset. This plan is particularly important since to determine profit maximization and sustainability in business. Local market abounds where guinea-fowl products are needed for purchase. The meat and the eggs of *Numidia* are in high demand all over the state of kano. Guinea-fowl is worth investing in and for this simple reason business moguls and potential large investors should entertain no fear in investing massively in it. The entry of business moguls will definitely move the business from the level of micro/small scale, which the wild bird is now to medium scale and possibly large scale where more economic benefits would be derived from it. It is important the government encourage massive investment in this bird as one of the wildlife domestication contributions to alleviate hunger and poverty in the state. The return on investment as shown by the analysis on Table 6 is high. All investment gives outstanding return, therefore government should invest heavily here as any amount invested will be retrieved with ease.

**Table 6: RATE OF RETURN ON DOMEATIC GUINEA-FOWL IN KANO**

**FIRM 1**

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	5,720	7,125	1,405	
2	2014	6,913	8,319	1,406	26.71%
3	2015	6,913	9,167	2,254	
4	2016	7,015	9,044	2,029	
TOTAL		26,561	33,655	7,094	

**FIRM 2**

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	8,340	9,920	1,580	
2	2014	6,150	10,500	4,350	42.90%
3	2015	10,111	15,462	5,351	
4	2016	10,111	13,721	3,610	
TOTAL		34,712	49,603	14,891	

**FIRM 3**

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	5,250	6,480	1,230	
2	2014	5,400	6,120	720	23.57%
3	2015	5,600	6,900	1,300	
4	2016	5,600	7,500	1,900	
TOTAL		21,850	27,000	5,150	

**FIRM 4**

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	11,200	17,462	6,262	
2	2014	13,673	19,515	5,852	35.27%
3	2015	18,688	21,950	3,262	
TOTAL		43,561	58,927	15,366	

## FIRM 5

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	3,276	5,627	2,351	
2	2014	5,300	7,806	2,506	67.57%
3	2015	5,300	9,819	4,519	
TOTAL		13,876	23,252	9,326	

## FIRM 6

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	10,673	14,429	3,756	60.55%
2	2014	10,000	18,726	8,762	
TOTAL		20,673	33,191	12,518	

## FIRM 7

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2015	9,962	15,406	5,444	46.18%
2	2016	13,713	19,201	5,488	
TOTAL		23,675	34,607	10,932	

## FIRM 8

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	6,327	8,015	1,688	
2	2014	4,530	6,210	1,680	42.11%
3	2015	5,790	7,433	1,643	
4	2016	3,155	6,482	3,327	
TOTAL		19,802	28,140	8,338	

## FIRM 9

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	10,525	16,131	5,606	
2	2014	13,414	20,000	6,586	46.28%
3	2015	13,762	19,019	5,257	
TOTAL		37,701	55,150	17,449	

## FIRM 10

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	7,150	12,214	5,064	41.22 %
2	2015	9,520	11,327	1,807	
TOTAL		16,670	23,541	6,871	

## FIRM 11

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	4,200	6,030	1,830	
2	2014	4,200	5,336	1,136	33.00%
3	2015	7,315	10,937	3,622	
4	2016	8,930	10,474	1,544	
TOTAL		24,645	32,777	8,132	

## FIRM 12

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	13,000	15,616	2,616	33.76%
2	2014	13,000	19,162	6,162	
TOTAL		26,000	34,778	8,778	

## FIRM 13

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	20,193	27,493	7,300	
2	2014	23,002	31,502	8,500	35.26%
3	2015	18,749	26,649	7,900	
4	2016	25,012	31,972	6,960	
TOTAL		86,956	117,616	30,660	

## FIRM 14

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	9,420	16,019	6,599	
2	2014	10,653	21,717	11,064	
3	2015	11,060	19,352	8,292	79.71%
4	2016	14,108	24,216	10,108	
TOTAL		45,241	81,304	36,063	

## FIRM 15

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	5,920	15,180	9,260	
2	2014	7,830	9,244	1,414	46.63%
3	2015	7,997	10,604	2,607	
4	2016	8,493	9,313	820	
TOTAL		30,240	44,341	14,101	

## FIRM 16

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	6,381	9,956	3,575	
2	2014	8,666	8,333	-333	35.25%
3	2015	7,523	9,250	1,727	
4	2016	4,320	8,830	4,510	
TOTAL		26,890	36,369	9,479	

## FIRM 17

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	6,115	9,314	3,199	
2	2014	8,523	11,770	3,247	30.89%
3	2015	10,000	15,340	5,340	
4	2016	10,000	18,609	8,609	
TOTAL		34,638	55,033	20,395	

## FIRM 18

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	3,930	5,872	1,942	
2	2014	4,500	7,150	2,650	62.17%
3	2015	6,000	9,673	3,673	
4	2016	6,000	10,436	4,436	
TOTAL		20,430	33,131	12,701	

## FIRM 19

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	9,000	12,316	3,316	
2	2014	12,000	14,180	2,180	30.65%
3	2015	12,000	16,717	4,717	
4	2016	14,480	18,820	4,340	
TOTAL		47,480	62,033	14,553	

## FIRM 20

S/N	YEAR	COST	REVENUE	PROFIT	RORI
1	2013	12,500	16,210	3,710	
2	2014	8,140	11,350	3,210	31.70%
3	2015	7,000	9,014	2,014	
4	2016	5,690	7,320	1,630	
TOTAL		33,330	43,894	10,564	

**Summary**

In the local markets in Kano state, Guinea-fowl is costlier than local fowl of the same size and is more sought after by people because of its palatability. The market for the sales of guinea-fowl is throughout the year. Also, there are no cultural, taboo or religious factors against consumption of guinea-fowl meat in Nigeria. Although its egg production is more seasonally displayed along the major highway, its supply could hardly meet the yearning of consumers. For these reasons investment in it is fully rewarded with profit as there is ready made market.

**Conclusion**

Micro/Small scale investment in this section is primarily due to poor financial base, lack of technical knowhow and use of native poor breeding stock. Investment in domestic guinea-fowl production is profitable. However, most production is done on backyard basis for now. The extensive and commercial farming of this wild bird has not really started. Commercialization pilot



schemes by the state government will showcase strongly latent lucrative of the avifauna species and boost the morale of potentials investors.

### **Recommendation**

Firstly, Government should involve expert in domesticated guinea-fowl farming as mean of promoting commercialization and empowering teeming unemployed youth who are looking for way out of poverty. Through the establishment of demonstration farms, people could be thought the basic skill of setting up guinea-fowl farm. Also, there is need for voice in the business; therefore formation of association for information sharing would be ideal. In this forum, people can share idea and rub mind on the progress of their investment. Lastly, availability of micro-credits facility for smallholder guinea-fowl farmers would promote investment.

### **References**

- Adeyemo, A. I. and Oyejola, O. (2004). Performance of guinea-fowl (*Numidia meleagris*) fed varying levels of poultry droppings. *International Journal of Poultry Science*
- Ayeni, J. S. O. (1983). The biology and utilisation of helmeted guinea-fowl (*Numidia meleagrisgaleatapallas*) in Nigeria. II, Food of helmeted guinea-fowl in KainjiLakebasin area of Nigeria. *African Journal of Ecology*
- Chepkemioi, M. Sila, D. Oyier, P. Malaki P., Ndiema, E. Agwanda, B. Obanda, V. Ngeiywa, K. J. Lichoti, J. Ommeh S. (2015). Nutritional Diversity of Meat and Eggs of Five Poultry Species in Kenya, *The JKUAT Scientific Conference*
- Larsen, K., R. Kim, L. Theus. (2009). Agribusiness and Innovation Systems in Africa, World Bank; Washington D.C.
- Nicely, R. (2013). Nigeria Food Processing Ingredients. Nigeria Food Processing Ingredients Market. USDA Foreign Agricultural Service. Gain Report.
- Tewe, O. O., Ayeni, J. S. O. and Ajayi, S. S. (1983). Body measurements, egg characteristics and social acceptance of guinea-fowls in Nigeria. *Tropical Agriculture*
- Wiggins, S. and Keats, S (2013). Leaping and Learning: Linking smallholders to markets in Africa. Agriculture for Impact. Imperial College London and Overseas Development Institute.