ISSN 0189-0514
*J. Anim. Prod. Res. (2016) 28(2):332-337*

National Animal Production Research Institute
Ahmadu Bello University
P.M.B 1096, Shika-Zaria,
Kaduna State, Nigeria.
Email: japr@napri-ng.org Website: www.naprijapr.org

# ADOPTION AND PROFITABILITY OF QUAIL PRODUCTION AMONG INMATES OF KADUNA OPEN PRISON CAMP, KADUNA STATE, NIGERIA

***[1]Ugbabe, O. O. and [2]Iorolum, E. I.**
*[1]Agricultural Economics and Rural Sociology Department, Institute for Agricultural Research, Ahmadu Bello University, Zaria, Nigeria.*
*[2]Nigerian Open Prison, Kaduna State, Nigeria.*
**Leading Author email: ougbabe@yahoo.com*

## ABSTRACT

This study was conducted to determine the adoption and profitability of Quail production in Kaduna State, Nigeria. A total of 200 brooded quail birds (growers) were used for the study. Awareness was also created on the importance of quail production using improved management practices. Descriptive statistics and the gross margin analysis were used to analyze the study objectives. Results from the study showed that 100% of the inmates indicated continued practice of the quail production technology after serving their jail terms. The gross margin analysis showed that a profit of ₦146,034.00 was realised from the investment of ₦96,966. The cost of producing one unit of quail was ₦484.83. The study recommended that: (i) Adequate and timely funding of the Nigeria prison service be made by the government with special emphasis on inmates training and provision for resettlement after their release; The Nigerian Prison Service through its agriculture section should deepen efforts towards establishment of hatcheries and feeds milling centres in Kaduna open prison camp (and agricultural/industrial training institutions) which could serve as a source of supply for both livestock feeds and day old quail/pullets/broiler chicks to other farmers.

## INTRODUCTION

According to Oyeyinka *et al*. (2011), the "term Poultry" refers to any bird reared and hunted for useful purposes which includes Chicken, Duck, Turkey, Guinea fowl, Geese, Quail *et cetera*. Poultry production contributes to the Nation's Gross Domestic Production (GDP) as it provides gainful employment and income for sizeable proportion of the population. Together with other livestock, the contribution to the GDP at 1994 factor cost increased from 3.882,3 million naira from 1981-85, 160 million naira in 1997 (Central Bank of Nigeria,1994, 1998).

The Nigerian Poultry Industry is less capitalized and it is based on small holdings owned by the peasant farmers or producers. Birds usually perform at low level and hence production cost is higher and consequently selling prices of products are higher beyond the reach of average Nigerians. This gives rise to protein deficiency factors in food in this country. Since feed cost represents over 70% of the total cost of production, reduction in feed cost is expected to reduce production cost and hence lower prices of poultry products within the range that an average Nigerian can afford thereby increasing the per capital consumption of the products.

Quail is a collective name for several genera of mid-sized birds generally placed in the order Galliformes. Old World quail are placed in the family Phasianidae, and New World quail are placed in the family Odontophoridae. The species of buttonquail are named for their superficial

resemblance to quail, and form the family Turnicidae in the order Charadriiformes. The king quail, an Old World quail, often is sold in the pet trade, and within this trade is commonly, though mistakenly, referred to as a "button quail". Many of the common larger species are farm-raised for table food or egg consumption, and are hunted on game farms or in the wild, where they may be released to supplement the wild population, or extend into areas outside their natural range. In 2007, 40 million quail were produced in the United States of America (Census of Agriculture, 2007). Quail (Coturnix coturnix) is a small, migratory, gallinaceous game bird, of the Old World (Thesaurus Dictionary, 2016).

Quail farming remains the only alternative in poultry production that is less expensive to raise, but highly profitable. Quail meat or egg also remains the highest nutritious poultry product which is affordable by an average Nigerian hence individuals can be self- employed and can generate income by venturing into quail farming since it is less expensive, have short or fast returns, and requires little space. The term quail farming actually means raising quails commercially like other poultry birds for the purpose of profitable eggs and meat production. Quail farming is a great potential farming business with lots of social, economic and health benefits, easy to maintain, creative and entertaining. Quail are hardy birds and almost all types of weather conditions are suitable for starting quail farming business. The meat and egg of quail are more tastier, nutritious and has less fat content than other poultry products, because quail egg and meat contain comparatively more protein, phosphorus, iron, vitamin A and B1 (Chindo and Olowoniyan, 2006). It has been shown to promote body and brain development in children and nursing mothers (Sahin *et al*., 2003).

## MATERIALS AND METHODS

The study was conducted at Kaduna Open Prison Camp, Barnawa Kaduna South Local Government Area of Kaduna State. The state is located on the southern part of high plains of northern Nigeria; bounded by parallels of $90^{o}$ 3'N and extends from the upper rivers Mariga on longitude $60^{o}$ 5 ' E to $8^{o}$ 48' E on the foot slopes of scarp of Jos. The state evidences a tropical climate with distinct seasonal regions, covering between hot, dry to cool and humid to wet with average rainfall of about 1066mm (Mohammed *et al.,* 2008).

Kaduna state lies in the Sudan savannah agro-ecological Zone of Nigeria. It has a population of 6,066,562 (Federal Government of Nigeria Official Gazette, (2007) . The main Ethnic groups are Hausa, Fulani, Bajjju, Kadara, Kagoma, Gbagi, Ninzo, Koro, Kahugu, Jabba, Kagoro, and Moro'a. The main crops grown are maize, guinea corn, millet, rice, potatoes, yam, ginger, groundnuts, sheanuts, chilies, beniseed and soyabeans. The predominant animals are cattle, sheep, goats, poultry and fisheries. The Kaduna Open Prison Camp is located in Barnawa Kaduna south Local Government Area.

After series of meetings and discussion with inmates in Kaduna Open Prison, 15 inmates were selected based on their willingness to participate in the action research. The 15 inmates represents the total number of inmates in Kaduna Open Prison. The project was demonstrated to all these inmates. The Open Prison Camp Poultry Project site located at Barnawa Kaduna South Local Government Area was selected due to available existing structures, security, and proximity of the site to inmates. Primary data was used in this study. The primary data was

collected through observations and oral interview during the implementation of participatory demonstration activities with group members involving 15 inmates.

Descriptive statistics like percentages, frequency and mean were used to analyze the percentage of people that adopted Quail production, while the gross margin analysis was use to analyze the profitability of quail production in Kaduna open prison camp.

**Gross margin [GM]**

Gross margin refers to the difference between the gross farm income and total variable cost (Olukosi and Erhabor, 1988). This measures the profitability of an enterprise by considering only the variable cost component.

GM = GFI – TVC----------(1)

Where: GM = Gross Margin

GFI =Gross Farm Income

TVC = Total Variable Costs

## RESULTS AND DISCUSSION

**Rate of Adoption of Quail Production**

Table 1 showed that 100% of the respondents indicated continued practice of the quail production technology after serving their jail terms. This implies that all the 15 prisoners in the Kaduna Open Prison will continue with their quail production and recommended practices which could bring about increase in quail production and guarantee the sustainability of the introduced technology in the study area. 200 Quail Birds were used in the project. Measures for quail production sustainability were made in order for the farmer to sustain the adoption of the recommended practices which includes:

(i) The group was trained on maintenance of mating ratio of 1 male to 4 females [1: 4], as it is a yard stick for optimum fertility. The required temperature of the breeding room should not be below 20 $^{0}$C with continuous source of light (14 – 16 hours) so as to have enough fertile eggs for incubation and reduce the total cost of purchasing day old quails.

(ii) The group was linked with private hatcheries (using artificial incubators to hatch their eggs) that are involved in exchange of quail chicks for fertile eggs.

(iii) The group was trained on the use of brooder hen (local chicken) to incubate quail eggs.

(iv) The group was linked with the Kaduna State private livestock farms/hatchery/feed millers association by state livestock department in Kaduna State through the welfare/After care Unit of the Open Prison Camp with the aim of obtaining membership certificate for group members.

**Table 1 Rate of Adoption of Quail Production by the Prison Inmates**

| Willing to continue quail production? | Frequency | percentage |
|---|---|---|
| Yes | 15 | 100 |
| No | - | - |
| **Total** | | **100** |

**Cost and Returns (Profitability) of Quail Production**

The cost and returns analysis shows the level of profitability (gross margin) of an enterprise and helps to decide whether to adopt a new production technology or not. Cost and returns analysis forces management to think ahead, and aid sound decision-making. At harvest, mortality rate was zero percent, implying 100 percent survival of the 200 Quails. The total revenue earned from sale of quails, quail eggs and quail droppings was ₦243,000.00 (Table 2). The total production cost of raising 200 quails from 4 weeks to harvest was ₦96,966.00. A gross margin of ₦146, 034 was realised from the investment. Returns per naira invested in quail production was ₦1.51.

This return per naira invested is very high compared to ₦ 0.23, ₦ 0.41, ₦ 0.91 and ₦ 0.71 returned per naira invested respectively by Kalla *et al*. (2007), Emokaro and Erhabor (2014), Emokaro and Eweka (2015) and Eweka and Osarenren (2016) from different poultry enterprises all over Nigeria. This showcase the very high profitability of Quail production.

**Table 2 Cost and Returns (Profitability) of Quail Production in Kaduna Open Prison**

| Items | Quantity | Average Price (₦) | Total (₦) |
|---|---|---|---|
| **Revenue** | | | |
| Live Quails | 160 | 250.00 | 40,000.00 |
| Smoked Quails | 40 | 312.50 | 12,500.00 |
| Eggs | 37 crates | 500.00 | 168,500.00 |
| Quail droppings | 11 bags | 2,000.00 | 22,000.00 |
| **Total Revenue** | | | **243,000.00** |
| **Variable Costs** | | | |
| Brooded Quails | 200 | 70.00 | 14,000.00 |
| Broiler Starter | 4 bags | 2,700.00 | 10,800.00 |
| Drugs: Anticoccidiostat | 1 | 350.00 | 350.00 |
| Multivitamins | 12pkt | 550.00 | 6,600.00 |
| Glucose | 1pkt | 70.00 | 70.00 |
| Layer Mash | 20.04 bags | 2,400.00 | 48,096.00 |

| | | | |
|---|---|---|---|
| Wood shavings | 6 bags | 350.00 | 2,100.00 |
| Transparent polythene | 24 yrds | 100.00 | 2,400.00 |
| Morigad | 2 litres | 2,100.00 | 4,200.00 |
| Hypo bleach | 4 | 150.00 | 600.00 |
| Energy | | | 2,250.00 |
| Transportation | | | 5,500.00 |
| **Total Variable Costs** | | | **96,966.00** |
| **Gross Margin** | | | **146,034.00** |
| **Returns per naira invested (GM/TVC)** | | | **1.51** |

## CONCLUSION

The Quail production and management practices demonstrated to the Inmates of Kaduna Open Prison was adopted wholesale. The gross margin analysis showed that a profit of ₦146,034.00 was realised from the investment of ₦96,966. The cost of producing one unit of quail was ₦484.83.

## REFERENCES

Census of Agriculture. (2007). United States Summary and State Data Volume 1 • Geographic Area Series • Part 51 AC-07-A-51 (PDF). USDA: 423.

Central Bank of Nigeria. (1994). Statistical Bulletin, 5: 105.

Central Bank of Nigeria. (1998). Annual Report and Statement of Accounts for the Year Ended: 102.

Chindo, H.J., and Olowoniyan, F.O. (2006). Processing and Utilization of Quail Products. A Paper Presented at National Workshop on Quail Production for Sustainable Household Protein Intake. National Agricultural Extension and Research Liaison Services, Ahmadu Bello University, Zaria, September 11th – 13th 2006: 69 – 74.

Emokaro, C. O., and Erhabor, P. O. (2014). Comparative Analysis of Profitability Production in Esan North East and Ovia North East Local Government Areas of Edo State, Nigeria. *Journal of Science, Environment Management*, 18(1): 121-126.

Emokaro, C. O., and Eweka, K. I. (2015). A Comparative Analysis of Profitability of Broiler Production Systems in Urban Areas of Edo State, Nigeria. *Journal of Science, Environment Management*, 19(4): 627-631.

Eweka, K. I., and Osarenren, C. O. (2016). Profitability and Input-income Determinants of Broiler Production Systems in Edo State, Nigeria. *Journal of Plant and Agricultural Research*, 2(1): 627-631)

Federal Government of Nigeria Official Gazette. (2007). Federal Government of Nigeria Official Gazette, 60(94):31-35.

Kalla, D. J. U., Barrier, G., Haruna, U., Abubakar, M., Hamidu, B. M., and Murtala, N. (2007). Economic Analysis of Broiler Production in Miango, Plateau State, Nigeria. Paper Presented at the Farm Management Association of Nigeria Conference, Ayetoro, Nigeria, September 4-6, 2007.

Olukosi, J.O., and Erhabor, P. O. (1988). Introduction to Farm Management Economics: Principles and Application. AGITAB Publisher Limited., Zaria-Nigeria.

Oyeyinka, R. A., Raheem, W. K., Ayanda, I. F., and Abiona, B. G. (2011). Poultry Farmers' Awareness and Knowledge of Improved Production Practices in Afijio Local Government Area, Oyo State, Nigeria. *Journal of Agricultural Research and Development*, 1(1): 001- 008.

Sahin, F., Karaman, I., Gulluce, M., Ogutcu, H., Sengul, M., Adıguzel, A., Kotan, R., and Ozturk, S. (2003). Evaluation of Antimicrobial Activities of Satureja hortensisL. *J. Ethnopharmacol*, 87: 61-65.

Thesaurus Dictionary. (2016). Thesaurus.com. The Media Dictionary.