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## Smallholder Layer Bird Production In Afijio Local Government Area, Oyo State Nigeria

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### ABSTRACT

Assessing the economics of production in poultry enterprise is a veritable tool to ensure continuity in the business. This study examined the profitability of layer bird production in Afijio LGA using questionnaire on randomly selected 110 layer bird farmers in the study area. Data were analysed using descriptive statistics, costs and returns analysis, and regression technique. The result revealed that the average number of birds in each farm was 180; average total fixed cost per farm per year was N553,000, while the average total variable cost was N1,311,600.00. The total cost incurred in stocking the farm was N1,864,600 and the total number of crates of eggs produced per month was 180 while the price per crate was N500. Total revenue generated was N1,530,000 per year and the gross margin was N218,400.00. The cost of feed, price per day, old chick, labour and quantity of birds stocked had a negative relationship with the gross margin at 1%. The study therefore recommended that farmers should be provided with loan facilities and inputs should be subsidized in the study area.

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**Keywords-** : Smallholder, poultry, Layers, Production, Oyo State, Nigeria

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## INTRODUCTION

Poultry production is the fastest growing component of global meat production, with developing and transitional countries assuming a leading role (Assa, 2012). Poultry farming today is a huge business that is split into several operations including hatcheries, pullet farms for meat production or farms for egg production. Poultry production as an aspect of livestock production is important to the biological, economical, and social development of the people in any nation (Oladeebo and Ambe-Lamidi, 2007). The contribution of poultry production to total output increased from 26% in 1995 to 27% in 1999 with an increase in egg production alone accounting for about 13% during the period (Ojo, 2003). The development of the poultry industry in Nigeria has been described as the fastest means of bridging the protein deficiency gap prevailing in the country. Unlike it is with pigs and cattle, there are fewer religious or social taboos associated with poultry. Hence products from poultry provide an acceptable form of animal protein to a vast majority of people. Poultry production assures quick returns within weeks in the case of broilers, and in months, in the case of layers (Rajendran and Moharthy, 2003). Poultry farming serves as an auxiliary occupation to complement the income from small and marginal farm space because of its vast potential to bring about rapid economic growth, particularly benefiting the weaker section of the populace (Ekunwe *et al.*, 2006). The poultry industry plays an important role in the development of Nigeria economy. It is a major source of eggs and meat, which have nutritional value, particularly in the supply of protein (Olagunju and Babatunde, 2011). Each operation in the poultry farm can become a business by itself. Some farms specialize in producing eggs for market, some in hatching chicks. Other businesses focus on feed preparation or on using the waste from poultry farms

for compost production and fertilizing. If managed and marketed well, all segments of the poultry business can be profitable. Poultry meat and eggs offer considerable potential for meeting human needs for dietary animal supply (Folounsho and Onibi, 2005). Broiler production is usually done to meet seasonal demands while layer production is embarked upon for regular supply of eggs for various uses by households. Commercial layer farms play an important role in meeting national protein needs (Kabir and Haque, 2010) through the supply of eggs in addition to poultry meat. Adepoju, (2008) observed that problems such as high cost of feed, other production cost, disease and poor marketing and distribution network are problems plaguing the poultry industry which make it difficult for existing farms to expand while new entrepreneur are reluctant to go into the business. In addition, Murtala (2004) also, observed that the price of eggs does not vary proportionately with the rise in prices of feed and the cost involved in commercial layer production. This study therefore, analysed economics of layer production in Afijio Local Government, Oyo State, Nigeria and provides answers to the following research objectives:

- i. analyse the costs and returns in layer production?
- ii. determine the factors influence profitability in layer production?
- iii. analyse the constraints to layer production?

## LITERATURE REVIEW

### Poultry Production in Nigeria

The poultry sub-sector is the most commercialized (capitalized) of all the subsectors of Nigeria's agriculture (Adene, 2006). There is however no comprehensive data on the subsector; thus making proactive intervention and planning in the sub-sector difficult due to dearth of accurate information or current data. The global spread of

Highly Pathogenic Avian Influenza (HPAI) across several countries in 2003 and especially, the confirmation of the epidemic in Nigeria in February 2006, brought attention of the Government of Nigeria (GON) and the international community to focused on the sub-sector by the (Adene, 2004). The types of poultry that are commonly reared in Nigeria are chickens, ducks, guinea fowls, turkeys, pigeons and more recently ostriches. Those that are of commercial or economic importance given the trade in poultry, however, are chickens, guinea fowls and turkeys, amongst which the chickens predominate.

### Egg Production

The egg production cycle lasts for about one year. The pullets and layer hens are raised mainly in environmentally controlled poultry houses in cage systems. To make the maintenance process easier, automated feeding, watering, and egg collection systems were developed. Feed and water are moved on rotating belts which pass by the cages. Another rotating belt collects the eggs and sends them to the sorting chamber to be tested for fertility, graded, and sorted according to size, making them ready for delivery to the market (Farran, 2009), Laying hens in egg producing farms are usually of small body frame and body weight compared to broilers. They can be classified into two groups: dual purpose chickens or egg producing chickens. Egg producing chicken breeds have been bred and raised for maximum egg production (up to 300 eggs per year) rather than high meat yield (Beutler, 2007). Dual purpose chickens are smaller in size than commercial meat breeds. They are used for meat as well as egg production, and can produce around 200 to 250 eggs per year (Farran, 2009), There have been several developments to increase the marketing value of eggs. These developments include omega-3 eggs; folate and lutein enriched eggs, as well

as free run and organic eggs. These specialty eggs increase the value of eggs, and have caused a noticeable change in the market.

### MATERIALS AND METHODS

This study was carried out in Afijio Local Government Area Oyo State, Nigeria. It is located in the south-western zone of the state, it covers a total land mass of 1.365km<sup>2</sup> with about 30 towns and villages. Afijio Local Government has a population of 84,504 (2006, NPC). There are 10 wards in Afijio local government; Ilora I, Ilora II, Ilora III, Fiditi I, Fiditi II, Aawe I, Aawe II, Akinmorin/Jobele, Iware, and Imini.

Primary data were collected with the aid of questionnaire distributed to randomly selected farmers in the study area. This study employed multistage sampling technique; Afijio Local Government was purposively selected based on its high concentration of poultry farmers. Then, four wards (Ilora II (Ilora), Fiditi I (Fiditi), Aawe II (Aawe) and Akinmooirin) were randomly selected from the 10 ward that make the local government. In the third stage, villages were selected from the wards. Finally 120 questionnaires were distributed based on the population size and 110 questionnaires were retrieved. Of the 110 sampled poultry farms, 9 were small, 85 were medium and 16 were large. Farm size was classified following Omotosho and Oladele (1988), Subhash *et al.*, (1999) and Ojo (2003). Farms having <1000 birds were considered as small farms, those with 1000 —3000 as medium farms while those with 3000 and more birds were classified as large farms. Since all the farms used for the study have less than 1000 layer birds, they are classified as smallholder farms. In line with Okerenta (2005), Orebiyi *et al.*, (2012), Usman (2012), Inoni (2010). The model specification is given as:

$$\pi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \ell$$

Where,

$\pi$  = Profit (Naira)

$X_1$  = Age (Years)

$X_2$  = Educational background

$X_3$  = Years of experience (Years)

$X_4$  = Feed (kg)

$X_5$  = Labour

$X_6$  = Drug (N)

$X_7$  = Price of matured layer (N)

$X_8$  = Birds in stock

$X_9$  = Price of day old chick (N)

$X_{10}$  = Mode of production

$X_{11}$  = Quantity of old birds (Numbers)

$\ell$  = The Stochastic error term

## RESULTS AND DISCUSSIONS

**Table 1: Costs and Returns in Layer Production**

Variables	Quantity	Unit Cost	Total Cost
<b>Fixed Costs</b>			
Poultry Pen	1	1,200,000	120,000
Brooding House	1	300,000	100,000
Drinkers	100	500	50,000
Feeding Trough	100	400	40,000
Battery Cage	3	80,000	240,000
Crates	50	60	3,000
<b>Total</b>			<b>553,000</b>
<b>Variable Costs</b>			
Point of Lay birds	180	1500	270,000
Drug/month	1	1,800 X 12	21,600/year
Feed/25kg/month	25 X12	2,200	660,000/year
Labour/month	1	10,000 X 12	120,000/year
Electricity/Gen/Month	10,000		120,000/year
Miscellaneous/month	10,000		120,000/year
<b>Total</b>			<b>1,311,600</b>
<b>Gross Margin</b>			
Total Variable Cost			1,311,600
<b>Items of Revenue:</b>			
No. of crates	6 crate/day		180 crates/month
Price per crate			500
Revenue from eggs/month			90,000
			1,080,000
Revenue from sales of Old layers	180	2500	450,000
<b>Total Revenue</b>			<b>1,530,000</b>
<b>Gross Margin</b>			<b>218,400</b>

Table 1 shows that on the average a smallholder layer farmer in Afijio local government spends ₦553,000 on fixed

costs, ₦1,311,600 annually as running costs, receives as revenue from sales ₦1,530,000. The total cost of production

far exceeds the total revenue, however, it promises to pay off since the gross margin is positive and in excess of the variable costs (₦218, 000.00). This is an

indication that a smallholder farmer can continue in the business while settling the fixed costs incurred in setting up the farm.

**Table 2: Analysis Showing Factors Affecting Profitability in Layer Production**

Variables	Coefficient	t-value	p-value	Std Error
Age	-0.001	-0.63	0.529	0.002
Educational background	-0.031	-1.08	0.284	0.029
Years of experience	0.001	0.25	0.800	0.004
Feed	-1.470	-2.71	0.008***	5.440
Labour	-8.350	-1.71	0.091*	4.890
Drugs	5.930	2.33	0.022**	2.550
Price of matured layer	-0.003	-1.42	0.160	0.004
Birds in stock	0.003	2.48	0.015**	0.007
Price of day old chick	-0.002	-2.87	0.005***	0.001
Mode of production	-0.067	-1.47	0.145	0.046
Quantity of old birds	-0.003	-4.13	0.000***	0.012
R <sup>2</sup>	0.2946			
Adj. R <sup>2</sup>	0.2154			
Prob>f	0.0002			

**Source: Field Survey, 2016. Number of Observation = 110**

Note: \*\*\* = Significant at 1%, \*\* = Significant at 5%, \* = Significant at 10%

The Table 2 showed the factors influencing the profitability of layer production using the multiple regression analysis. Of the eleven variables considered, only 6 were statistically significant. Cost of feed was found to have a negative but significant relationship with the gross margin. This implies that as the poultry owners spent more on feeding, there was an increase in the cost of production and therefore a reduction in profitability. A unit increase in the amount of feed leads to a 1.470 unit decrease in profitability. The amount spent on labour also had a negative relationship with the gross margin. This implies that a higher cost of labour reduced the amount of profit generated from the sale of eggs. Cost of drugs however had a significant positive relationship with the gross margin. A

unit increase in the amount of drugs lead to a 5.930 unit increase in profitability. This could be associated with the higher egg production which occurs when appropriate drugs are given to the birds at the right time. The total number of birds in stock had a significant positive relationship with the gross margin. This implies that the higher the number of birds, the higher the amount of eggs produced, thus increasing profitability. A unit increase in the total number of birds in stock lead to a 0.003 increase in profitability. The price of a day old chick had a significant relationship with the gross margin. This indicates that the higher the price of a day old chick, the higher the amount that would be spent on stocking, thus reducing the gross margin. A unit increase in the price of a day old chick would lead to a 0.002 unit decrease in profitability. The quantity of old birds

before stocking also had a significant negative relationship with the gross margin. This could be as a result of the low productivity of such birds while the farm

continued to incur the cost of feeding them. A unit increase in the stock of old birds lead to a 0.003 unit decrease in the gross margin.

**Table 3: Constraints in poultry layer Production**

Perceived Constraints	Strongly Agree	Agree	Undecided	Disagree	Strongly disagree	Score	Weight	Rank
Finance	<b>84</b> (76.4)	<b>19</b> (17.3)	0 (0)	<b>7</b> (6.4)	0 (0)	<b>510</b>	<b>39.23</b>	1st
Labour	<b>39</b> (35.5)	<b>36</b> (32.7)	2 (1.8)	<b>23</b> (20.9)	10 (9.1)	<b>401</b>	<b>30.84</b>	7th
Scarcity or high cost of feed	<b>50</b> (45.5)	<b>46</b> (41.8)	6 (5.5)	<b>5</b> (4.5)	<b>3</b> (2.7)	<b>465</b>	<b>35.77</b>	3rd
High mortality Rate	<b>15</b> (13.6)	<b>40</b> (36.4)	<b>7</b> (6.4)	<b>39</b> (35.5)	<b>9</b> (8.2)	<b>343</b>	<b>26.38</b>	10th
Adulterated fish Meal	<b>30</b> (27.3)	<b>16</b> (14.5)	<b>16</b> (14.5)	<b>28</b> (25.5)	20 (18.2)	<b>338</b>	<b>26.00</b>	11th
Low or fluctuating price	<b>56</b> (50.9)	<b>38</b> (34.5)	<b>4</b> (3.6)	<b>9</b> (8.2)	<b>3</b> (2.7)	<b>465</b>	<b>35.77</b>	3rd
Scarcity or high cost of day old Chicks	<b>46</b> (41.8)	<b>34</b> (30.9)	<b>5</b> (4.5)	22 (20)	<b>3</b> (2.7)	<b>399</b>	<b>30.69</b>	8th
Vaccination	<b>27</b> (24.5)	<b>49</b> (44.5)	<b>7</b> (6.4)	<b>13</b> (11.8)	<b>14</b> (12.7)	<b>393</b>	<b>30.23</b>	9th
High tax	11 (10)	<b>19</b> (17.3)	<b>59</b> (53.6)	<b>7</b> (6.4)	<b>14</b> (12.7)	<b>336</b>	<b>25.85</b>	12th
Theft of birds and eggs	<b>59</b> (53.6)	<b>35</b> (31.8)	2 (1.8)	<b>9</b> (8.2)	<b>5</b> (4.5)	<b>464</b>	<b>35.69</b>	4th
Delay in egg Laying	<b>54</b> (49.1)	<b>37</b> (33.6)	2 (1.8)	10 (9.1)	<b>7</b> (6.4)	<b>451</b>	<b>34.69</b>	6th
Management System	<b>59</b> (53.6)	<b>42</b> (38.2)	1 (0.9)	<b>4</b> (3.6)	<b>4</b> (3.6)	<b>478</b>	<b>36.77</b>	2nd
Disease	<b>49</b> (44.5)	<b>47</b> (42.7)	2 (1.8)	8 (7.3)	<b>4</b> (3.6)	<b>459</b>	<b>35.31</b>	5th

**Source: Field Survey, 2016.** Note: Percentage in parentheses

Table 3 shows the perception of farmers on the various constraints in layer production. The five-point Likert-scale was used to examine these positive perceptions. Among the perceived constraints in layer production, finance was found to be the highest as it ranked 1<sup>st</sup> with a total score of 510 while high tax was found to be the least constraint as it had a score of 336 which placed it at the 12<sup>th</sup> position. Poor management system came 2<sup>nd</sup> while both scarcity or high cost of feed and low or fluctuating price came 3<sup>rd</sup>. Theft of birds find eggs, disease and delay in the laying of eggs came 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> respectively. In the lower half, labour, scarcity or high cost of day old

chicks, vaccination, high mortality rate and adulterated fish meal was 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> respectively.



## CONCLUSION

The findings reveal that layer production is profitable in the study area. Analysis of the result also showed that inputs such as cost of feed, amount spent on drugs, price, number of birds in stock, price of day old chicks and quantity of old birds had a significant relationship with the profitability of layer production in the study area. Finance, poor management, scarcity or high cost of feed, low or fluctuating prices, theft of birds and eggs, disease and delay in the laying of eggs were the major problems associated with layer production in the study area.

## RECOMMENDATIONS

The study therefore recommends that farmers should have access to loans and credit facilities at low interest rate in order to help them boost their production level. Farm inputs such as drugs and vaccines should be made available to the farmers at the right time and at subsidized prices. Layer farmers should endeavour to form cooperatives to enable them to access loans from the various financial institutions. Resource personnel like extension agents should be motivated to visit and educate farmers regularly on modern poultry production. Efforts should be made to improve maize production through the provision incentives in order to provide feed for the poultry industry.

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