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RESEARCH ARTICLE

COMPARATIVE PERFORMANCE OF NERA BLACK AND SHAVER BROWN HENS FED SELF-COMPOUNDED AND COMMERCIAL LAYERS' DIETS

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ABSTRACT

This study was conducted to assess the performance and economic traits of feeding self-compounded layers' diet and four commercial layers' diets to Nera Black and Shaver Brown hens in hot humid tropical environment. A total of 120 28-weeks old Nera black hens and 120 28-weeks old Shaver brown hens were used. Each strain of bird was divided into five groups of 24 hens each and each group (for each strain) was randomly assigned to one of the five experimental diets (A, B, C, D, and E, respectively). Results showed that the Nera Black hens which consumed self-compounded diet (A) and commercial diet (D) recorded better ($P<0.05$) hen day production percentage value than Shaver Brown hens that consumed the same feeds.The gross profit from eggs produced by Nera Black birds that consumed the self-compounded diet was higher ($P<0.05$) than that from eggs produced by the Shaver brown birds which consumed the same diet. It was concluded that the Nera Black hens performed better than the Shaver Brown hens in terms of dozens of eggs produced, revenue from dozens of eggs produced and gross profit, while the use of self-compounded diet resulted in better performance than the use of commercial diets.

INTRODUCTION

In Nigeria, the rate at which food is being produced is not commensurate with the rate at which population is increasing. According to **FOS (1996)** as cited in **Ojo (2003)**, food production increases at the rate of 2.5% while food demand increases at a rate more than 3.5% due to high rate of population growth of 2.83%. According to **Ajibefun and Daramola (1999)** poultry production has been one of the most important contributions to employment opportunities in Nigeria. Poultry production has become a popular source of income to small scale farmers in Nigeria because of high level of research information developed in the past years, the development of economic integrated system for production and marketing of poultry products, and the knowledge of genetics, nutrition, management and disease control (**Olarinde and Kuponiyi, 2004**). Poultry production has also been described as the most economic means of reducing the animal protein shortfall in developing countries (**Smith, 2001; Oluyemi and Roberts, 2000**). Poultry feeding is a major item of cost in poultry production. Many commercial poultry farms had collapsed while a good number of them experienced slow growth as a result of sudden increase in the cost of poultry feeds (**Ogundipe, 2002; Onimisi, 2004**). This incident paved way for commercial poultry feed manufacturers to source for unconventional, low quality and stale feed ingredients in order to maximize profit. Neglecting the fact that laying birds need qualitative feed to enhance egg production. High cost of poultry feed also results in general increase in the cost of production. Hence, in other to increase profitability in the poultry industry, there is the need to formulate practical rations that will help in reducing the cost of production and still maintain high level of performance in the birds (**Adebayo *et al.*, 2002**). Where farmers are faced with sub-standard or low quality feed from the commercial feed dealers, they have the choice of formulating their own feeds provided the proximate/ chemical compositions of the feed ingredients being used in ration formulation are known so as to meet the nutrient requirements of the animal for optimum performance (**Lorgyer *et al.*, 2007**).Although management and feeding practices are the key determining factors of egg production, the breed of laying hen affects egg production. The rate of adaptation and quality of egg production of different exotic breeds of hen vary when exposed to a variety of climate and environments. According to **Miles and Jacob (2000)**, some hens may be laying at a very high production rate while others may not be laying at all.

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Conducting research on the laying capabilities of two strains of exotic breed of hen therefore, has become imperative so as to obtain information that would help to establish proven production basis which will determine their suitability for massive commercial and small scale egg productions when exposed to feeds from different sources. The present study was therefore conducted to determine the comparative laying response of Shaver brown and Nera black hens to self-made and commercial layers' diets in hot humid environment.

MATERIALS AND METHODS

The study was conducted at the Poultry Unit of the Department of Animal Science Teaching and Research Farm, University of Nigeria, Nsukka. Nsukka lies within longitude 6° 45'E and 7°E and latitude 7° 12.5'N (**Offomata 1975**) and on the altitude 447m above sea level. The climate of the study area is typically tropical, with relative humidity ranging from 65 – 80% and mean daily temperature of 26.8°C (**Agbagha, *et al.*, 2000**). The rainy season is between April – October and dry season between November – March with annual rainfall range of 1680 – 1700mm (**Breinholt *et al.*, 1981**). The entire study lasted for 12 weeks.

Experimental Diets

Five experimental diets (A, B, C, D and E) was used as follows: Diets B, C, D and E will comprise Top®, Gold medal®, Chidera® and Vital® commercial layers feeds, respectively while diet A was self-compounded (homemade) layers' mash. The percentage composition of the self -compounded diet is presented in Table1.

Table 1. Percentage and Calculated Compositions of Experimental Diets

Ingredients	Diets				
	A	B	C	D	E
Maize	48	-	-	-	-
Wheat offal	10	-	-	-	-
Palm kernel cake	14	-	-	-	-
Groundnut cake	10	-	-	-	-
Fish meal	2	-	-	-	-
Soy bean meal	6	-	-	-	-
Bone meal	3	-	-	-	-
Lime stone	6				
Salt	0.25	-	-	-	-
Lysine	0.25	-	-	-	-
Methionine	0.25	-	-	-	-
Layers' premix*	0.25	-	-	-	-
Total	100				
Crude protein (%)	17.00	16.50	16.50	16.50	16.50
Crude fibre (%)	5.49	6.00	6.50	6.00	6.50
Ether extract (%)	4.97	5.00	4.50	4.56	4.00
Lysine (%)	1.24	0.80	1.00	0.90	1.00
Methionine (%)	0.92	0.34	0.50	0.45	0.55
Calcium (%)	3.73	3.80	3.50	3.55	3.60
Energy (Mcal/kg ME)	2700	2500	2550	2600	2650

Animals and Management

The experiment was carried out in accordance with the provisions of the Ethical Committee on the use of animals and humans for biomedical research of the University of Nigeria, **Nsukka (2006)**. A total of 120 28-weeks old Nera black hens and 120 28-weeks old Shaver brown hens were used for the study.

The hens were housed in the laying house situated at the Poultry Unit of the Department of Animal Science Teaching and Research Farm, University of Nigeria, Nsukka. The house is an open – sided tropical type, fitted with two-tier battery cages with feeders and drinkers. Flat aluminum metal plates were constructed and used to partition the feeding troughs at intervals of four (4) cages. The idea was to prevent spillover of feeds from or to neighboring treatments. The birds of each strain were randomly divided into five groups of 24 hens each and each group was randomly assigned to one of five experimental diets (Self-compounded layers' diet (A) (reference diet), and four commercial layers' diets-B, C, D, and E, respectively) using a randomized completely blocks design (RCBD), with strain constituting the block.

Diet A which is the self-compounded diet served as the control diet. Each diet constituted a treatment and each treatment was replicated three (3) times with eight (8) birds per replicate for each strain. Two hens were housed in a cage measuring 49 x 35 x 42 cm. Four (4) of such cages constituted a replicate for each strain. Each hen in a replicate received about 130g of layers' mash daily and *ad libitum* supply of water for the twelve weeks experimental period. As a general flock prophylactic management strategy, routine vaccinations were administered as and when due.

Performance Parameters Measured

The parameters measured included as follows:

Initial and final body weights: These were measured at the beginning and at the end of the experiment, respectively. Average Body Weight (kg) = Final body weight – initial body weight.

$$\text{Average Daily Feed Intake (g)}: \frac{\text{Feed Offered (g)} - \text{Feed Refusals (g)}}{\text{Number of Hens}}$$

$$\text{Feed Conversion Ratio} = \frac{\text{Quantity of feed consumed}}{\text{Doz. of eggs produced}} \text{ (Jabben } et\ al.\text{, 2004).}$$

$$\text{Average Egg Weight (g)} = \frac{\text{Total weight of eggs (g) per treatment}}{\text{Total number of birds in that treatment}}$$

Percentage Egg Production: Percentage egg production was calculated using the formula as shown below:

$$\text{Hen day Production (\%)} = \frac{\text{Average No of eggs per day}}{\text{No of birds alive}} \times 100\%$$

Egg Weight (g): Egg weight was taken for every egg collected for the hens and the weighing was done for all the collected eggs within one hour of collection. Electronic balance (D and G sensitive scale) was used and the measurement expressed in grammes.

Egg Quality: Sixteen (16) eggs were randomly selected weekly for egg quality analysis. The indices determined were as follows:

Egg Shell Weight (g): Each egg was carefully broken and dried after which the egg was weighed using a weighing balance.

Egg Shell Thickness (mm): This was determined by pulling off the shell immediately the egg was broken and the shell was air-dried for a day (24 hours) after which the egg shell thickness was determined with the help of a micrometer screw guage.

Egg Shape Index: The egg shape index was calculated as the proportion of egg length to diameter.

Albumin Height and Diameter (mm/cm): The eggs after weighing were broken into a flat bottom glass (beaker) positioned on a flat surface. The albumin height was measured using a tripod micrometer. Albumin diameter was taken as the maximum cross sectional diameter of the albumin using a pair of calipers and read on a ruler calibrated in millimeter.

Yolk Height and Diameter (mm/cm): The eggs after weighing were broken into a flat bottom glass (beaker) positioned on a flat surface. The Yolk height was measured using a tripod micrometer. Yolk diameter was taken as the maximum cross sectional diameter of the yolk using a pair of calipers and read on a ruler calibrated in millimeter.

Albumin Index: The albumin index was calculated as the proportion of yolk height to diameter.

Yolk Index: The yolk index was calculated as the proportion of yolk height to diameter.

Haugh Unit: This was calculated from the values obtained from the albumin height and egg weight by using the formula: Haugh's unit = 100log $(H+7.57-1.7W^{0.37})$ as described by **Williams (1992)**.

Determination of Economic traits

Data generated were used to determine the cost implication of feeding self-compounded layers' diet and some commercial layers' diets to the experimental hens. The economic indices determined include the following:

$$\text{Dozens of Egg Produced per bird (dozen)} = \frac{\textit{Total egg number per bird}}{12}$$

Price per Crate of Egg (₦): A crate of egg was sold at ₦650 as at the time of the research work.

$$\text{Cost of 1kg of Feed (₦)} = \frac{\textit{Amount per bag of feed (N)}}{\textit{25kg feed (1 bag of feed)}}$$

$$\text{Total Feed Consumed (kg)} = \frac{\textit{Total feed consumed (g)}}{1000}$$

Cost of Feed Consumed (₦) = Total feed Consumed (₦) × Cost of kg of feed (₦)

Price of a Dozen of Egg (₦) = 1 dozen of egg was sold at ₦260.40 as at the time of the research work.

Cost per dozen of egg (₦) = Total cost of feed consumed / Total dozen of egg produced

Revenue from Dozens of Egg Produced (₦) = Total dozens of egg produced x Price of one dozen of egg.

Gross Profit (₦) = Revenue from dozens of egg produced (₦) - Cost of feed Consumed (₦) (all other things been equal).

Proximate and Statistical Analyses

Samples of the five experimental diets were analyzed for their proximate compositions according to **AOAC (2006)** methods. Data collected were subjected to analysis of variance (ANOVA) for randomized completely block design (RCBD) as described by **Akindele (2004)** using a Statistical Analysis System (SAS, 2006). Significantly different means were separated using Duncan's New Multiple Range Test (**Duncan, 1995**) as outlined by **Obi (2002)**.

RESULTS AND DISCUSSION

Effect of Feed type and Strain type on Performance Traits of Nera Black and Shaver Brown Hens

Data on the effect of feed type and strain type on performance traits of Nera Black (NB) and Shaver Brown (SB) hens are presented in Table 3. While no significant (P>0.05) effect existed between feed type and strain type in final body weight and average body weight gain, there were feed type x strain type effects (P<0.05) on hen day production, average daily feed intake (ADFI) and feed conversion ratio (FCR). Nera Black hens which consumed self-compounded diet (A) and commercial diet (D) had significant (P<0.05) hen day production percentage value than Shaver Brown hens that consumed the same feeds. It has been reported (**Ojepapo *et al.*, 2009**) that egg production is of great economic importance and that the success of the enterprise depends on the total number of eggs produced.

Table 2. Proximate Compositions of the Experimental Diets

Determined Compositions	Diets				
	A	B	C	D	E
Crude Protein (%)	17.80	17.30	17.00	17.20	16.96
Crude fibre (%)	5.00	4.60	4.45	4.15	5.00
Ether extract (%)	5.77	5.33	5.17	5.56	5.64
Ash (%)	11.40	10.70	10.40	13.30	13.10
Moisture (%)	11.35	11.45	11.30	10.91	11.30
Energy (Mcal/kg ME)	2670	2450	2455	2560	2565

Under the same dietary regime, the use of Nera black hens for egg production may be a better option. As shown in Table 3, Nera Black hens which consumed commercial diet C had significant (P<0.05) higher ADFI and FCR values than Shaver Brown hens that consumed the same diet. The observed differences in hen day production, ADFI and FCR between strains that were fed the various feeds may be attributed to genetic variation. This is in line with earlier reports (**Nawar and Abdou, 1999; Suk and Park, 2001; Hocking *et al.*, 2003**) which showed that genetic variation existed in egg production between breeds, strains and lines. However, the present observation disagrees with the report of **Duduyemi (2005)** which showed that no effect (P>0.05) existed between strains in overall egg production. The fact that Shaver brown hens which consumed commercial diet C had lower (P<0.05) ADFI and FCR values than Nera black hens which also consumed the same diet (Table 3) tends to suggest that Shaver brown hens utilized the feed more efficiently than their Nera black counterparts.

A similar observation had been reported by **Yakubu *et al.*, (2007)**. It does imply therefore, that under the same dietary regime, the use of Shaver brown hens for egg production will help to save cost due to reduction in feed intake and cost of feed consumed.

The observation that the egg shell thickness value of Shaver Brown hens was higher (P<0.05) than that of the Nera Black hens could be due to difference in the genetic constitution of the two strains of birds. This is in line with earlier report (**Curtis *et al.*, 1985**) as cited by **Singh *et al.* (2009)**, which showed that different strains of laying hens vary significantly in egg shell quality.

Table 3. Effect of Feed type and Strain type on Performance Traits

Parameters	Strain	A (control)	B	C	D	E
Initial weight (kg)	NB	1.39	1.33	1.32	1.43	1.28
	SB	1.26	1.31	1.26	1.40	1.28
	SEM	0.04	0.06	0.06	0.03	0.04
Final body weight (kg)	NB	1.52	1.40	1.37	1.48	1.34
	SB	1.38	1.37	1.33	1.47	1.35
	SEM	0.04	0.05	0.06	0.05	0.08
Av body wt gain (kg)	NB	0.13	0.07	0.05	0.05	0.06
	SB	0.18	0.06	0.07	0.07	0.07
	SEM	0.03	0.03	0.04	0.02	0.05
Hen day production (%)	NB	87.67^{a}	86.00	79.33	80.67^{a}	77.33
	SB	65.67^{b}	75.00	78.33	63.67^{b}	59.67
	SEM	1.87	2.35	2.77	1.01	2.32
Av daily feed intake (g)	NB	79.17	93.10	99.25^{a}	89.58	79.17
	SB	75.42	76.67	80.83^{b}	84.17	58.75
	SEM	1.42	2.37	1.56	1.78	2.35
Feed conversion ratio	NB	1.09	1.37	1.52^{a}	1.35	1.25
	SB	1.38	1.41	1.25^{b}	1.60	1.20
	SEM	0.08	0.05	0.04	0.10	0.07

^{a,b}; Row means with different superscripts differ significantly at *P* <0.05. NB= Nera Black, SB= Shaver Brown

Table 4. Effect of Feed type and Strain type on the External Egg Parameters of Nera Black and Shaver Brown Hens

Parameters	Strain	A (control)	B	C	D	E
Av egg wt(g)	NB	69.55	64.50	63.11	64.50	64.84
	SB	62.16	65.11	64.56	67.30	65.40
	SEM	0.96	0.60	0.84	0.88	1.52
	NB	0.23	0.20^{b}	0.23	0.23	0.20^{b}
Egg shell thickness(mm)	SB	0.26	0.23^{a}	0.25	0.25	0.26^{a}
	SEM	0.02	0.01	0.02	0.01	0.01
	NB	8.62	7.97	7.88	8.35	7.95
Egg shell weight (g)	SB	7.84	8.05	8.43	8.89	8.68
	SEM	0.37	0.05	0.19	0.14	0.09
	NB	3.31	3.29	3.25	3.28	3.29
Egg diameter (cm)	SB	3.29	3.31	3.30	3.34	3.35
	SEM	0.05	0.01	0.02	0.03	0.04
	NB	4.74	4.74	4.71	4.79	4.72
Egg length (cm)	SB	4.50	4.69	4.65	4.74	4.66
	SEM	0.01	0.03	0.03	0.03	0.04
	NB	1.43	1.44	1.45	1.46	1.44
Egg shape index	SB	1.37	1.42	1.41	1.42	1.39
	SEM	0.05	0.02	0.07	0.09	0.08

Effect of Feed type and Strain type on the External Egg Parameters of Nera Black and Shaver Brown Hens

The effect of strain type and feed type on the external egg characteristics of Nera Black and Shaver Brown hens is shown in Table 4. Although no combination (P>0.05) effect existed between strain type and feed type in average egg weight, egg shell weight, egg diameter, egg length and egg shape index, significant (P<0.05) feed type x strain type existed in egg shell thickness. Shaver Brown hens which consumed commercial diets B and E had higher (P<0.05) egg shell thickness value than Nera Black hens that consumed the same feeds.

Effect of Feed type and Strain type on the Internal Egg Parameters of Nera Black and Shaver Brown Hens

The effect of feed type and strain type on the internal egg characteristics of Nera Black and Shaver Brown hens is shown in Table 5. There were no combination (P>0.05) effect between strain type and feed type in all the internal egg parameters (haugh unit score, yolk weight, yolk height, yolk diameter, yolk index, albumin weight, albumin height, albumin diameter, albumin length and albumin index) determined.

Table 5. Effect of Feed type and Strain type on the Internal Egg Parameters of Nera Black and Shaver Brown Hens

Parameters	Strain	A (control)	B	C	D	E
Haugh unit score(%)	NB	92.33	83.33	86.33	86.00	82.67
	SB	87.33	88.33	88.33	89.67	89.00
	SEM	1.67	0.85	0.89	1.22	1.09
Yolk wt (g)	NB	16.01	16.44	15.72	16.25	16.02
	SB	15.35	15.95	15.88	16.04	15.55
	SEM	0.09	0.23	0.13	0.30	0.57
Yolk hight (mm)	NB	18.96	18.32	18.73	18.40	17.52
	SB	17.47	18.55	18.29	18.80	18.04
	SEM	0.32	0.15	0.21	0.35	0.24
Yolk diameter(cm)	NB	2.99	3.05	2.99	3.03	3.21
	SB	3.04	3.00	2.30	3.00	3.00
	SEM	0.03	0.04	0.05	0.04	0.05
Yolk index	NB	0.64	0.60	0.63	0.61	0.56
	SB	0.57	0.62	0.61	0.63	0.60
	SEM	0.01	0.01	0.01	0.01	0.01
Albumin wt (g)	NB	39.18	38.23	36.88	38.98	38.10
	SB	36.48	38.72	37.57	40.00	39.68
	SEM	0.54	0.07	0.98	0.77	0.86
Albumin hight (mm)	NB	8.73	7.16	7.61	7.63	6.77
	SB	7.77	8.08	8.07	8.45	8.14
	SEM	0.24	0.20	0.09	0.31	0.12
Albumin diameter(cm)	NB	5.74	6.31	5.96	6.00	6.21
	SB	6.06	6.24	6.04	6.29	6.33
	SEM	0.12	0.10	0.11	0.18	0.21
Albumin length (cm)	NB	7.54	7.93	7.87	7.96	8.14
	SB	7.78	7.74	7.60	8.30	7.63
	SEM	0.34	0.23	0.25	0.18	0.24
Albumin index	NB	1.31	1.26	1.32	1.32	1.31
	SB	1.29	1.24	1.26	1.32	1.20
	SEM	0.02	0.05	0.04	0.03	0.03

^{a,b}; Row means with different superscripts differ significantly at P <0.05.. NB= Nera Black, SB= Shaver Brown

The observed similarity in the values obtained for the internal egg parameters of the two strains of birds could be attributed to the fact that these exotic birds are commercial hybrids that have been selected over many generations from interbreeding between specialized breeds, strains and lines. Similar views have been expressed by **Akinokun and Dettmers (1977)** as cited by **Duduyemi (2005).**

Effect of Feed type and Strain type on cost implication of feeding self-compounded and Commercial Layers' Diets to Shaver Brown and Nera Black Hens

Table 6 shows the cost implication of feeding self-compounded diet A and four different commercial diets to Nera Black (NB) and Shaver Brown (SB) hens. There was no combination (P>0.05) effect between strain type and feed type in cost of feed consumed and cost per dozen of egg. However, combination (P<0.05) effect existed between feed type x strain type in dozens of eggs produced per bird, total feed consumed, revenue from dozens of egg produced and gross profit. Nera Black hens that consumed the self-compounded diet produced more (P<0.05) dozens of eggs than the shaver brown hens that consumed the same diet. Nera Black hens also consumed more (P<0.05) of commercial diet C than the Shaver brown hens.

Table 6 also shows that more (P<0.05) revenue was realized from the dozens of eggs produced by Nera Black hens which consumed the self-compounded diet (A) and commercial diets D and E than the Shaver brown hens that consumed the same diets. The gross profit from eggs produced by Nera Black birds that consumed the self-compounded diet was higher (P<0.05) than that from Shaver brown hens which consumed the same diet.

Among the five diets used in the study, the consumption of the self-compounded diet (A) by the birds had significant and positive effect on the dozens of eggs produced, revenue from dozens of eggs produced and gross profit realized. This tends to indicate that the use of the self-compounded diet reduced production cost, increased performance in laying hen and increased profit margins of the enterprise. This is in tandem with previous reports (**Adebayo *et al.*, 2002; Afolayan *et al.*, 2009)** which showed that to increase profitability in the poultry industry, there is need to formulate practical rations that will help in reducing the cost of production and still maintain high level of performance in good strain of birds. That the Nera black hens produced more dozens of eggs than the Shaver Brown hens under the same dietary regime (Table 6) does imply perhaps that the Nera black hens were genetically superior to the Shaver brown hens.

Table 6. Effect of feed type and strain type on the cost implication of feeding Self-compounded and Commercial Layers' Diets to Shaver Brown (SB) Hens

Parameters	Strain	A (control)	B	C	D	E
Dozens of eggs produced per bird (dozen)	NB	6.73[a]	6.32	6.08	6.18	5.91
	SB	5.05[b]	5.72	6.01	4.88	4.54
	SEM	0.21	0.53	0.34	0.42	0.35
Price per crate of egg (₦)	NB	650.00	650.00	650.00	650.00	650.00
	SB	650.00	650.00	650.00	650.00	650.00
	SEM	-	-	-	-	-
Cost of kg of feed (₦)	NB	60.00	74.00	72.00	72.00	70.00
	SB	60.00	74.00	72.00	72.00	70.00
	SEM	-	-	-	-	-
Total feed consumed (kg)	NB	7.36	8.66	9.23[a]	8.33	7.36
	SB	7.01	7.13	7.52[b]	7.83	5.46
	SEM	0.35	0.38	0.31	0.33	0.36
Cost of feed consumed (₦)	NB	441.60	640.84	664.56	599.76	515.20
	SB	420.60	527.62	541.44	563.76	382.20
	SEM	4.55	3.45	4.33	3.35	4.14
Price of a dozen of egg (₦)	NB	260.40	260.40	260.40	260.40	260.40
	SB	260.40	260.40	260.40	260.40	260.40
	SEM	-	-	-	-	-
Cost per dozen of egg (₦)	NB	65.62	101.40	109.30	97.05	87.17
	SB	83.29	92.24	90.09	115.52	84.19
	SEM	1.87	2.07	2.11	2.09	1.99
Revenue from dozens of egg produced(₦)						
	NB	1752.49[a]	1650.94	1583.23	1609.27[a]	1538.96[a]
	SB	1315.02[b]	1489.49	1565.00	1270.75[b]	1182.22[b]
	SEM	2.05	2.51	2.52	2.25	2.73
Gross profit (₦)	NB	1310.89[a]	1010.10	918.67	1009.51	1023.76
	SB	894.42[b]	961.89	1023.56	706.99	800.02
	SEM	2.25	3.36	3.55	3.28	3.34

[a,b]; Row means with different superscripts differ significantly at $P < 0.05$.NB= Nera Black, SB= Shaver Brown.

It does seem therefore that the Nera black hens are better adapted to humid tropical environment than their Shaver brown counterparts. **Akanni *et al.* (2008)** and **Gwaza and Egahi (2009)** had expressed similar views. The performance of laying hens kept in the tropics is determined to a large extent by the bird's productive adaptability (**Yakubu *et al.*, 2007**). Interestingly, the Nera Black hens ate more of commercial diet C than the Shaver brown hens. This could possibly be due to genetic differences coupled with physical activities, physical condition, basal metabolic rate, body temperature and body composition (**Luiting, 1990 and Singh *et al.*, 2009**).

From a general point of view, the results obtained in the present study tends to suggest that the use of self-compounded diet resulted in better performance and profit margins of the poultry enterprise than the use of the commercial feeds. This assertion agrees with earlier reports (**Singh and Panda, 1988; Ogunwoleye and Onwuka, 1997; Asaniyan and Laseinde, 2005; Lorgyer *et al.*, 2007**). Good strain of birds therefore, should be considered as well as good formulated and balanced ration when venturing into the poultry enterprise, especially egg production. **Afolayan *et al.* (2009)** and **Singh *et al.* (2009)** had made similar suggestion.

Conclusion

It is evident from the results obtained in the present study that the Nera Black hens performed better than the Shaver Brown hens in terms of dozens of eggs produced, revenue from dozens of eggs produced and gross profit, while the use of self-compounded diet resulted in better performance than the use of commercial diets.

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