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# EVALUATION OF BODY WEIGHT, FEED CONSUMPTION CURVE AND EGG PRODUCTION CYCLE OF NERA BLACK LAYERS REARED IN SOUTH – SOUTH, NIGERIA

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**Abstract:** This study was conducted to evaluate the performance of 550 Nera black layers in body weight, feed consumption curve and egg production cycle. The layers were reared in cages for the entire experimental period of 18 months. The layers were fed commercially available layer diet. Results showed that body weight and feed consumption were not significantly different (P>0.05). The increased amount of feed consumed increases the body weight and feed efficiency per dozen eggs of Nera black layers. The result also revealed that the corresponding coefficient of variation ranged from 40.11 and 56.40 in values. Body weight and feed consumption curve rises sharply, reaching a peak at the 12th month and declining at 13th month, thereafter an increase in body weight and feed consumption was observed. The hen day production obtained was lower (65 %) in phase one at 42 weeks of age, while phase two had lower value of 62 % from 43 weeks to 62 weeks of age, followed by phase three which has less than 62% hen day production at 63 weeks up to 72 weeks. It was concluded that body weight, feed consumption curve and egg production cycle of Nera black layers reared in poultry unit of Delta State Polytechnic, Ozoro, and experienced poor performance as is influenced by erratic feeding. Therefore, it is recommended that layers could be fed ad libitum to enhance daily hen day production and weight gain.

**Keywords:** Nera Black, Body weight, Feed Consumption, Egg Production, Performance, Hen Day Production.

## INTRODUCTION

Over the years, poultry egg production has witnessed tremendous increase due to different research that has been carried out in different area of poultry production: Nutrition, genetic make-up, physiology, health status, breeding as, housing on' Layer birds (Adenokun, 1977). Eanerjee (2005) stated that egg production commences at about 22 weeks of age (five and half months), rises sharply reaching a peak at about 32- 35 weeks of age, and then gradually declines at the rate of half a week. He further stated that it is thus unusual routine practice to replace the layers at the age of 18 months.

Feed consumption and its efficient utilization is one of the major concerns in commercial table egg production as feed cost is one of the major components of total cost of production. Feed alone may contribute from 60 to 70% of the total cost of production in egg type layers according to Mian (1994) and Quanibet *et al.,* (1992). Better utilization of feed and avoiding unnecessary feed wastage could be the leading factors in minimizing total cost of production (Olomu, 1998). A layer requires 2.5kg of feed for 1kg egg produced (Ascard *et al.,1*995). Elwardany *et a!.,* (1995) reported a daily feed intake of 102g over a 52-week production period and 2.07kg feed per dozen egg laid. Petek (1990) reported a daily feed consumption per layer (115g).

Feed consumption is a variable phenomenon and is influenced by several factors such as strain of the bird, energy content of the diet, ambient temperature, stocking density of the birds in the shed, hygiene conditions and rearing environment. When feed quality and house temperature were maintained constantly, an increased density of birds increased feed intake per dozen eggs by 689 per bird (Adams and Craig, 1985). The present study aimed to evaluate the performance of body weight, feed efficiency per dozen egg production cycles in the management practices in a commercial laying strain.

## MATERIALS AND METHODS

The study was carried out at the poultry unit of the Polytechnic farm. It is located on latitude 5° 40[1] and 6° E on the Greenwich Meridian. The area has an annual rainfall of between 2500-3 000 mm and mean temperature at the unit was 27.4°C with range from 25°C to 30°C all through the period of the study.

The birds used for the study were 550 Nera Black layers maintained at the Polytechnic farm. The birds were managed under battery cage system. Two layers each were kept per cage for a period of 18 months. Water and feed troughs were made of PVC pipes where feeding and watering were fed *ad libitum*. Calculated composition of the commercial layer diet used was 16.00 % crude protein and 2600 kcal/kg M. All birds were dewonned for every 8 weeks. Vaccination and medication was carried out. Multivitamins were administered in the morning at the recommended dose in drinking water for about a week, after NDVK vaccination.

During the experimental period, the egg production was recorded daily. Initial individual body weight and subsequently once in every 28 days was recorded. Feed intake, mortality and culling during the period was also recorded.

The body weight and feed intake data collected during the entire experiment were subjected to statistical analysis of variance while mean, standard deviation and coefficient of variation (CV %) using the GCM procedure of SAS (1987). Based on the data, egg production was calculated in terms of hen day (per cent), hen house (per cent), hen housed .per bird (number) egg production and feed efficiency per dozen eggs.

## RESULTS AND DISCUSSION

### Body weight

The mean monthly body weight, feed intake and feed efficiency per dozen eggs of experimental layers under a laying period was presented in Table 1. The results showed that body weight of Nera Black layers from 5th and 18th month were not significantly ($P>0.05$) different. The result also revealed that from 16th and 18[lh] month, the body weight (1.5 kg) remains constant. This disagreed with the report by Thirunavukkarasu (2006) and Abeke *et al.,*(2008). Such constants in body weight attainment could be argued on poor performance of egg, type of layers with decrease in percentage hen day production. Muthusany and Viswanathan (1998) had different weight of 1.8 kg for a laying bird of 5th to 12th month of age, Figure 1 revealed that growth rate increase with age of the birds similar to the body weight. From 5th month, the body weight slightly increased from 1.47 to 1.50 kg. This growth pattern revealed that layer birds are underweight which might cause birds to lay eggs at a lower rate.

## Feed Consumption

Feed consumed per bird per month during the laying phase consequently in the overall production cycle as consumption during the laying period (18 months) represented over 54 % of the total consumption (Table 1). It was observed that a lower amount of layers mash was consumed when the birds were at the age of 5th to 8th month. This may be attributed to the decrease in egg production. Feed consumption rises slightly, reaching a peak at the 11th month and decline at 12th to 14th month (Fig 2). This decline may partly be attributed to be erratic nutrition, as there were no adequate feed for the flocks at this period. Such feed deprivation could have adversely influenced the egg production.

## Egg Production Cycle

The monthly hen day production obtained in this study showed a poor performance of the birds (Table 2). Poor management practices can be implicated for such performance because the mean hen day production obtained was not typical of Nera Black layers that were managed. Table 3 showed the mean, standard deviation and coefficient of variation of hen day production of Nera Black. The results revealed that the range of the value from (56.40 to 40.11 %) obtained in coefficient of variation suggests lapses in the management practices. Such lapses which may have arisen from underfeeding or malnourishment of the birds, accounted for such wide range of over 400 g with a standard deviation value of 0.12 kg. Carey *et al.,* (1995) also reported similar poor performance over 415 g with a standard deviation value of 0.10 kg as a result of erratic feeding.

In egg production cycle, the hen day production obtained was lower (65%) in phase one, at 42 weeks of age. While phase two had lower value of 62 % from 43 weeks to 62 weeks of age, followed by phase three which has less than 58 % at 63 weeks up to 72 weeks (Fig 1). These findings agreed with the report of Banerjee, (2005) and Abeke *et a!.,* (2008) who observed 65 % of egg production within the same season (Table 4).

## CONCLUSION

From the study, one can conclude that body weight, feed consumption curve and egg production cycle of Nera Black layers reared in poultry unit of Delta State Polytechnic, Ozoro, and experienced poor performance as is influenced by erratic feeding. Also, it is recommended that layers should be having usual routine *ad libitum* feeding practice to produce eggs for a number .of years, but it is only economical to keep the layers not more than 18 months because less than 60 % hen day production and maximum egg size can be expected when the birds reach about one year old. Egg size tends to get smaller just-before, birds stop laying.

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**Table l: Mean Body Weight (kg) (±S.), Feed Consumption and Feed Efficiency per Dozen Eggs (kg/dozen eggs) of Nera Black Layers.**

| Age in flock (months) | Mean body wt(kg) | Feed intake/ Bird/month(kg) | Feed Efficiency per Dozen eggs (kg/dozen eggs) |
|---|---|---|---|
| 5. | 1.47±0.02 | 1625±20.40 | 1.88 |
| 6. | 1.48±0.12 | 1609±24.06 | 1.96 |
| 7. | 1.49±0.41 | 1682±36.11 | 1.86 |
| 8. | 1.50±0.25 | 1867±10.38 | 2.08 |
| 9. | 1.50±0.19 | 1938±11.79 | 2.50 |
| 10. | 1.5 I± 0.44 | 1907±22.19 | 2.05 |
| 11. | 1.50±0.32 | 1826±31.01 | 2.16 |
| 12. | 1.48±0.08 | 1760±28:72 | 2.01 |
| 13. | 1.46±0.17 | 1598±22.82 | 1.84 |
| 14. | 1.48±0.31 | 1689± 18.06 | 1.99 |
| 15. | 1.48±0.06 | 1778±28.73 | 2.02 |
| 16. | 1.50±0.08 | 1738±30.01 | 2.47 |
| 17, | 1.50±0.09. | 1872±26.08 | 2.04 |
| 18. | 1.50±0.04 | 1927±26.03 | 2.40 |

Table 2: Summary of Egg Production Cycle of Nera Black Layers

| Age in flock (months) | Net, of birds | HDP (%) | Total hen days | No. of eggs laid |
|---|---|---|---|---|
| 5. | 550 | 71.43 | 15400 | 11000 |
| 6. | 548 | 64.52 | 16988 | 10960 |
| 7, | 547 | 67.67 | 16410 | 10946 |
| 8, | 542 | 64,52 | 16802 | 10840 |
| 9. | 538 | 67.67 | 16140 | 10760 |
| 10, | 537 | 64.52 | 16647 | 10740 |
| 11. | 535 | 64,52 | 16585 | 10700 |
| 12. | 530 | 67.67 | 15900 | 10600 |
| 13. | 526 | 64.52 | 16306 | 10520 |
| 14. | 521 | 67.67 | 15630 | 10420 |
| 15. | 518 | 64.52 | 16058 | 10360 |
| 16. | 508 | 64.52 | 15748 | 10160 |
| 17. | 498 | 68.96 | 14442 | 9960 |
| 18. | 490 | 64.52 | 15190 | 9800 |
| Total | | | 224246 | 146760 |

Table 3: Mean (X), Standard Deviation (SD) and Coefficient of Variance (CV %) of Egg Production of Nera Black Layers

| Age in flock (months) | No. of birds | Mean (X) | Standard Deviation (SD) | Coefficient of Variance (CV%) |
|---|---|---|---|---|
| 5. | 550 | 16.88 | 9.52 | 56.40 |
| 6. | 548 | 16.94 | 8.56 | 50.53 |
| 7. | 547 | 16.97 | 8.83 | 52.06 |
| 8. | 542 | 17.12 | 8.47 | 49.45 |
| 9. | 538 | 17.25 | 8.68 | 50.31 |
| 10. | 537 | 17.28 | 8.38 | 48.53 |
| If. | 535 | 17.35 | 8.40 | 48.40 |
| 12. | 530 | 17.51 | 8.54 | 48.78 |
| 13. | 526 | 17.65 | 8.20 | 46.45 |
| 14. | 521 | 17.82 | 8.39 | 47.06 |
| 15. | 518 | 17.92 | 8.07 | 45.01 |
| 16. | 508 | 18.27 | 7.90 | 43.23 |
| 17. | 498 | 18.64 | 8.26 | 44.40 |
| 18, | 490 | 18.94 | 7.60 | 40.11 |

Table 4: Traits of Nera Black During Laying Period of 18 Months

| Measures of Egg Production | Period of Laying |
|---|---|
| Hen housed per bird (eggs/bird) | 266.84 |
| Hen house production (%) | 62.78 |
| Hen day production (%) | 65.45 |
| Hen day per bird (eggs/bird) | 360.08 |
| Average hen days (birds) | 527.64 |

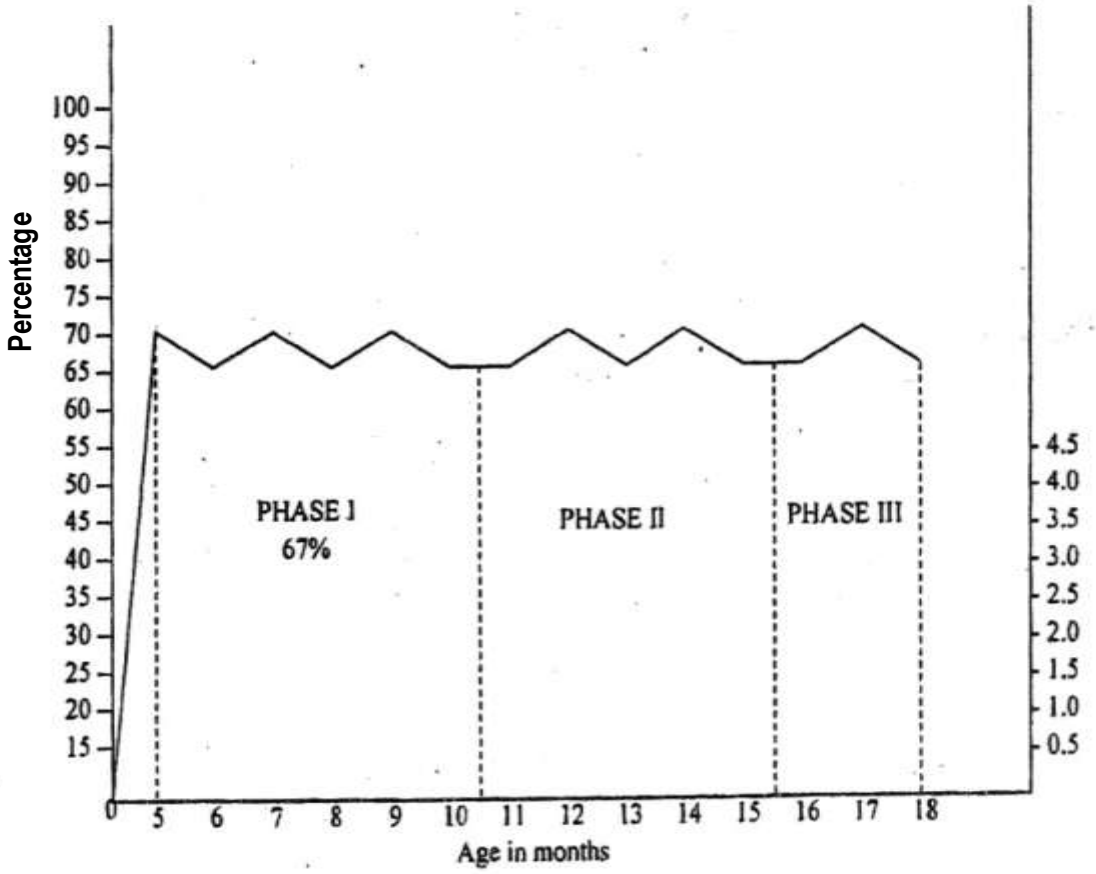


Figure 1: Body Weight, Feed Consumption and Egg Production Curve of Nera Black Layers

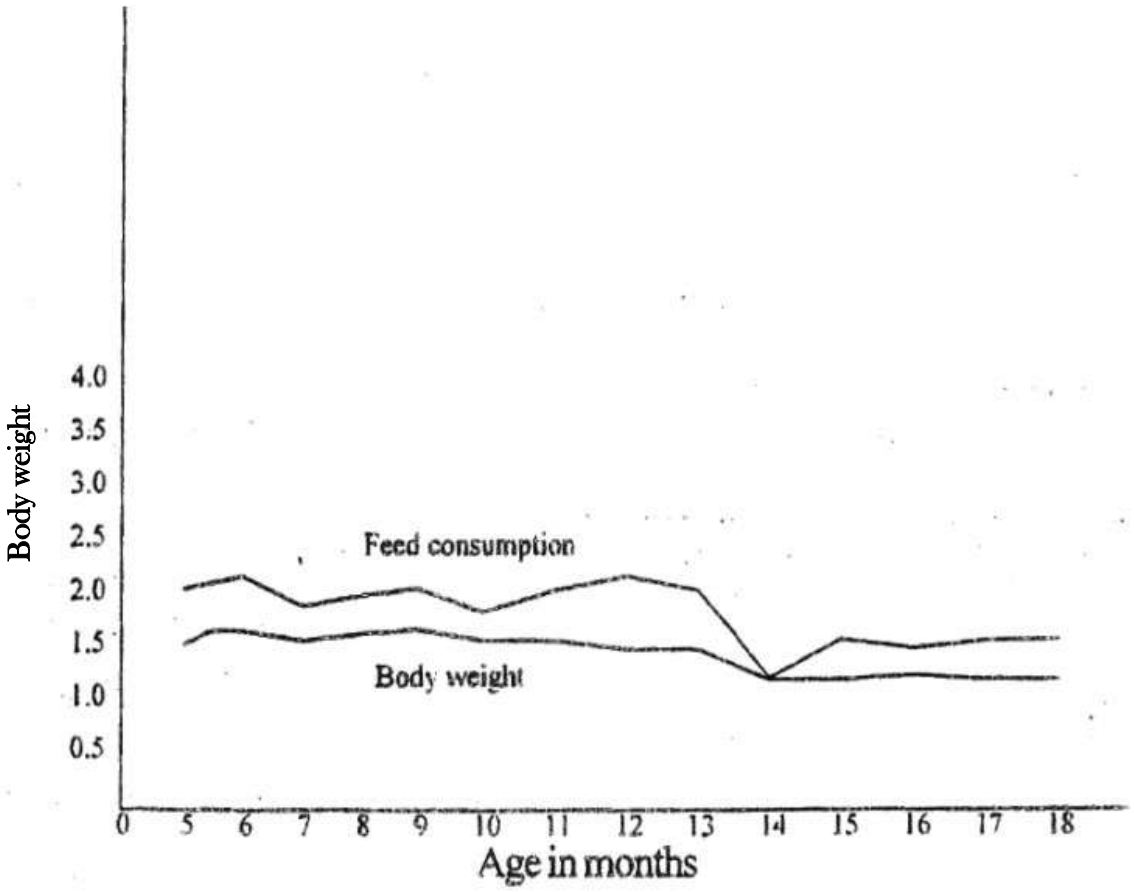


Figure 2: Body Weight and Feed Consumption Curve of Nera Black Layers

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