

Growth Response and Carcass Quality of Quails under Different Feeding Regime

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Abstract:- Quail is rich in protein, calcium and can be reared with little capital but there is paucity of information on the feeding regime hence this study was designed to determine the effect of different feeding regimes on growth and carcass quality etc. One hundred and twenty 2-weeks Japanese quail chicks of mean weight of $40.78 \pm 1.7g$ were used for the feeding trial. The study had 3 feeding regimes replicated four times in a complete randomized design (CRD). In group 1 (Q_1), the quails were fed once daily, group 2 (Q_2) were fed twice daily while in group 3 (Q_3) the quails were fed thrice, daily. Data were collected on feed intake, weight gain and feed conversion ratio etc. The mean total weight gain across the treatments was significantly influenced by different feeding regime ($P < 0.05$). The feed efficiency was relatively the same in Q_2 and Q_3 ($P > 0.05$). No mortality was reported across the treatments. The dressing percentage of the quails in the treatments was significantly influenced by the treatment effects ($P < 0.05$). Flavor, texture and general acceptability of the meat were not influenced the feeding regime. It could be concluded that feeding quails twice supported improved weight gain, feed efficiency and carcass quality.

Keywords:- Feed Efficiency, Feeding Regime, Protein, Quails, Weight Gain.

I. INTRODUCTION

The supply of animal protein is very important as the population increases. Protein is very important in growth, reproduction and day-to-day activities. Poultry is one of the major sources of animal protein and generally accepted worldwide. Chicken, duck, guinea fowl and turkey are the major classes of poultry (Omole *et al.*, 2013; Popoola *et al.*, 2020) In the recent time, attempts are being made to domesticate and popularize quails production. Quail is a small bodied bird of weight varying between 100 – 300g when fully matured. It has feathers and the female lay small size eggs of less than 15g compared to egg laying chicken of about 40 – 60g. The meat is a delicacy and highly nutritious (Babangida *et al.*, 2006; Dudusola, 2009). The meat contains low fat and low cholesterol hence it is a good antidote for fat related diseases such as hypertension. It is a

fast growing bird that reaches maturity at 56 days. It is highly recommended for the adults because of its nutritional importance. It occupies less space compared to other classes of poultry. It eats less feed compared to others. It can be started with low capital. It has short generation interval. Quail egg provides five times as much iron and potassium as chicken eggs. It also contains more phosphorus and calcium (Dudusola, 2009; Bawa *et al.*, 2011). Quail production is becoming popular as and there is need to look into its feeding management for better performance in growth and reproduction hence the study was conducted to determine the effect of different feeding regime on feed intake, weight gain, feed conversion ratio etc.

II. MATERIALS AND METHODS

The experiment was carried out at the Quail Unit of the Institute of Agricultural Research and Training (I.A.R.& T.), Moor Plantation, Ibadan which is located on Longitude $03^{\circ}51'E$, Latitude $07^{\circ}23'N$ and Altitude 650' lies in the humid zone of the rainforest belt 0703.25 of South-western Nigeria with mean annual rainfall of 1220 mm and mean temperature of $26^{\circ}C$. One hundred and twenty 2-weeks Japanese quail chicks of mean weight of $40.78 \pm 1.7g$ were used for the feeding trial. The study had 3 feeding regimes replicated four times in a complete randomized design (CRD). In group 1 (Q_1), the quails were fed once per day, group 2 (Q_2) they were fed twice daily while in group 3 (Q_3) the quails were fed thrice daily. Gross composition of the experimental diet is shown in table 1. Data were collected on the growth performance (feed intake, weight gain and feed conversion ratio). Total Feed intake was calculated by deducting the left over feed from a weighed quantity of feed supplied total. The birds were weighed at weekly intervals with the use of weighing balance. Feed conversion ratio (FCR) was calculated as the ratio of feed intake to weight gain. Record on mortality were also taken. The live body weight at slaughter after 16 hour of feed withdrawal was measured on day 49 (slaughter day) but the birds had free access to water during the 16 h feed withdrawal. The slaughtering of each bird was done by neck-cutting with a knife.

Table 1. Gross composition of the feed

Nutrients	%
Maize	52.00
Soya beans cake	8.00
Groundnut cake	15.30
Maize offal	15.00
Bone meal	3.00
Oyster shell	6.00
Salt	0.20
Methionine	0.15
Lysine	0.10
Premix	0.25
Total (kg)	100.00
Calculated composition	
Crude protein (%)	17.01
ME (Kcal/kg)	2.76

Dressing Percent:

This was calculated for the birds as expressed below:

$$\text{Dressing percent} = \frac{\text{eviscerated weight} \times 100}{\text{Live-weight}}$$

The cooked meat samples were served to twenty taste panelist for rating with the aid of questionnaires that were administered for rating (colour, appearance, flavor, texture, taste and overall acceptability) of the meat samples according to the method of Bawa *et. al.*, (2011). The rating was 1,2,3, 4, 5, 6, 7, 8 and 9 which correspond to dislike extremely, dislike very much, dislike moderately, dislike slightly, Neither like nor dislike, Like slightly, like moderately, like very much, like extremely. The treatment scores was assessed by choosing the score rating of each samples with highest frequency and then the mean scores of treatment based samples were calculated on each of the meat sensory characteristics (colour, appearance, flavor, texture, taste and overall acceptability). All data were subjected to statistical analysis using analysis of variance and the means were separated if they were significantly different using Duncan Multiple Range Test (SAS,2000).

III. RESULTS AND DISCUSSION

The mean total feed intake was significantly different from one another as shown in table 2. The highest weight gain of 100.36g was recorded in Q₃ which was relatively the same with 99.82g in Q₂ (P<0.05). The total feed intake reported in the study was closely similar to the report of (Omole, *et.al.*, 2011).

Table 2: Growth performance of quail under different feeding regimes

Parameters (Means)	Q ₁	Q ₂	Q ₃	±SEM
Initial weight. (g)	38.66	38.29	38.98	9.89
Final weight. (g)	126.11	138.11	139.34	25.67
Total weight gain (g)	87.45 ^b	99.82 ^a	100.36 ^a	3.23
Total feed intake (g)	461.74 ^b	476.14 ^a	477.71 ^a	7.06
Mortality (%)	0.0	0.0	0.0	
Feed conversion ratio	5.28 ^b	4.77 ^a	4.76 ^a	0.13
Dressing percent (%)	62.33 ^b	64.33 ^a	64.26 ^a	2.98
Heart weight (%)	0.56	0.57	0.57	0.05
Liver weight (%)	2.15	2.17	2.17	0.14
Lung weight (%)	1.64	1.65	1.66	0.13

Means with different superscripts along the same row are significantly different (P<0.05).

Q₁ - Quail fed once daily, Q₂ - Quails fed twice daily, Q₃ - Quails fed thrice daily

The mean total weight gain across the treatments was significantly influenced by different feeding regime. The lowest feed intake of 461.74g was recorded in Q₁ (P<0.05). The weight gain recorded in this study was relatively closer to the report of Bawa *et. al.*, (2011). The feed efficiency was relatively the same in Q₂ and Q₃ (P<0.05). The relatively the same feed efficiency recorded in Q₂ and Q₃ suggest that it is advisable to feed twice daily. No mortality was reported across the treatments. The zero mortality recorded on all the treatments suggests that quails are hardy and good management practices were strictly adhered to according to different authors (Bawa *et. al.*, 2011; Babangida *et. al.*, 2006; Popoola *et.al.*,2020). The dressing percentage of the quails in the treatments was significantly influenced by the treatment effects.

Table 3: Organoleptic properties of the meat of quails under different feeding regimes

Mean Score Values	Q ₁	Q ₂	Q ₃	±S.E.M.
Colour	6.71	6.72	6.72	0.41
Taste	7.12	7.11	7.20	0.42
Flavour	6.86	6.86	6.88	0.46
Texture	6.41	6.42	6.42	0.41
General Acceptability	6.89	6.90	6.82	0.45

Means with the same superscripts are not significantly different (P > 0.05).

Q₁ - Quail fed once daily, Q₂ - Quails fed twice daily, Q₃ - Quails fed thrice daily

The highest DP of 64.33% was recorded in the group fed 2 times daily and was not significantly different from 64.26 recorded in Q₃ fed thrice daily. The lowest DP was recorded in Q₁ fed once daily. The dressing percentage reported in this trial was relatively similar to the report of Babangida *et. al.*, (2006) and Bawa *et. al.*, (2011). The results of organoleptic properties of the meat (Table 3) indicated that the mean colour and taste of the meat were not significantly different from one another ($P>0.05$). Also, flavor, texture and general acceptability of the meat were not influenced ($P>0.05$) by the three feeding regime.

IV. CONCLUSION

The mean total feed intake total weight gain were the same in Q₂ and Q₃ also dressing percentage of the quails in the treatments was significantly influenced by the treatment effects but relatively the same in Q₂ and Q₃. Flavor, texture and general acceptability of the meat were not influenced the feeding regime. The relatively the same feed efficiency recorded in Q₂ and Q₃ suggest that it is advisable to feed quail twice daily.

REFERENCES

- [1]. Association of Official Analytical Chemist, A.O.A.C. (1990). Official Methods of Analysis, 13th Edition, Washington, D.C
- [2]. Babangida S. and Ubosi C.O. (2006). Effects of dietary protein levels on the performance of laying Japanese quails (*Coturnix coturnix japonica*) in a semi-arid environment. *Nig. J Anim. Prod.* 33(1): 45-52
- [3]. Bawa, G. S. L. H. Lombin, P. Karsin., Musa, U. E. Payi and D. Shamaki (2011). Responses of Japanese quails to varying dietary protein levels in the Tropics. *Nig. J Anim. Prod.* 38(1): 43-54.
- [4]. Dudusola I.O., (2009), *Effects of Storage Methods and Length of Storage on some Quality Parameters of Japanese Quail Eggs* TROPICULTURA, 27, 1, 45-48
- [5]. Ionița, L.; Elena Popescu-Micloșanu, Pană, C.; Ionița, M., (2012). *Bibliographic Study on some Environmental Parameters in Intensive Adult Japanese Quails Raising*, University of Agricultural Sciences and Veterinary Medicine Iasi
- [6]. Popoola, Y.A., Fayenuwo, J. O., Olupona, J.A., Banjoko, O.J., Durotoye, E.S., Harry, B.A, Omole, A.J (2020) *Bio-Security And Disease Management In Micro-Livestock*. Greenchoice Publications 57pg