EFFECT OF PRODUCTION PERIOD ON THE PERFORMANCE OF QUAILS *(COTURNIX COTURNIX JAPONICA)* FED TWO COMMERCIAL BROILER DIETS IN NORTHEASTERN NIGERIA

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Abstract

The study was conducted at the Research Farm of Abubakar Tafawa Balewa University, Bauchi; Nigeria to study the Effect of Production Period on the Performance of Quails (Coturnix coturnix japonica). The results showed that egg production was significantly ($p<0.001$) influenced by production period in the parental stock. Other traits such as egg weight, shell thickness and shell weight were not affected by the production period in both the parents and F1 generation. Most external egg traits investigated were not affected by the dietary treatment in both the parent and F1 generation, but there was significant ($p<0.01$) shell weight effect in the two diets. The growth parameters studied such as feed conversion ratio (FCR), feed intake (F1) and live weight (LW) differed significantly ($p<0.01$) in the parents with changes in the production period. Conversely, these traits (FCR, FE, F1 and LW) did not change with respect to dietary treatments in both parents and F1 generation. Based on the results obtained, the productivity of quails in the study area was applicable compared to the level obtained elsewhere.

Introduction

The significance of animal protein in sufficient and balance nourishment is considerable for the human health with respect to the physical and mental process (Sule H.A. et al, 2015). Meating this demand for animal protein requirements calls for intensified production of animals, with prolific tendency, short period of gestation, rapid growth and short generation interval (Agwunobi and Ina-Ibor, 2007). Japanese quails fall within this description and should be considered as animal of choice in increasing animal protein sources (Sule, H.A. et al, 2015 and Haruna et al; 1997). The meat of quail is lean and the egg is low in cholesterol (Schwartz and Allen, 1981) less fat and high protein and hence is a good quality meat for diabetic and high blood pressure patients (Edace et al; 2007).

Materials and Methods

Study Area

Bauchi is located in the northern guinea savannah (latitude 9°30'N and 12° 30'N and longitude 8° 45' and 11° E). The state has an average attitude of about 600mm above sea level. The temperature ranges from minimum of 9-10°c in December to January to a maximum of 35-45°c between April and May. The annual rainfall ranges from 600mm-1300mm (National Office of Statistics 1999).

Source of Experiential Materials

About 230 quail birds were purchased from the National Veterinary Research Institute (NVRI) Vom, the Plateau State of about 5-6 weeks of age. The birds were given anti stress before transported to Bauchi from Vom in the early morning hours. On arrival the birds were transferred to fabricated metal cages inside the poultry house where they were grouped in ratio of 1 male to 3 females per pen. They were housed in a cage petitioned into 8 units in a completely randomized block design. All birds were weighted in a group and individually before placing them into the units; each quail was weighted from each unit at weekly interval for seven weeks. Two treatment with four replicates each of 15 laying birds and 5 males were randomly selected and assigned to each treatment. The birds were properly housed in a fabricated metal cages were two commercial feeds and water were given *ad-libitum*. Eggs collection, incubation and hatchery proceedings using manually operated waterbed incubator, brooding, rearing and other management practices were conducted. Mean daily feed intake, mean egg production, mean feed conversion and mean egg weight were recorded as described by Orunninayi (2008) and (Bawa *et al* 2010).

Data Analysis

Data was subjected to analysis of variance (ANOVA) and means were separated using

general linear model as contain in SPSS (1996) statistical package procedure.

Results

The results of growth performance of the Japanese quails are showing in table 1 and 2. Table 1 indicates the influence of breeds and production period on feed intake, feed conversion ratio, feed efficiency and live weight. The results indicates that feed conversion ratio ($p<0.001$), feed efficiency ($p<0.001$) feed intake ($p<0.01$) and live weight ($p<0.01$) differed significantly with respect to production period in the parents stock. Means with production period were all lower than the overall means in the parents stock, while the means in the F1 generation is higher than that of the overall means in the production periods of 10-18 weeks and 19-26 weeks respectively.

Means of feed intake in the production period of 26 weeks is higher in parents than the overall means. This is so, because the older the bird the higher the feed they consumed.

The overall means for feed conversion ratio, feed efficiency and live weight in F1 generation were 3.16±0.00, 0.20±0.44 and 137.62±2.16 respectively. Therefore, the effect of production period was not significant on the above mentioned parameters. However, F1 was higher in both 10-18 weeks and 19-26 weeks respectively than the overall means with respect to feed intake.

However, there is no significant effect from the treatment diets on the growth performance of quails in both the parents and F1 generation as shown on table 2.

Discussion

The amount of feed consumed depends upon, metabolizable energy (ME) content of the diets, age of the birds, their production status an the ambient temperature (Sule, H.A. et al, 2015). The energy requirement of growing quails is about 2800kcal/ME/kg and 2550kcal/ME/kg for layer quails (Fah, 2005). Though raising the energy level from 2600-2800kcal/ME/kg did not influence the gain in live weight, but it significantly affected ($p<0.001$). The feed efficiency and feed conversion ratio as the feed consumption remain stable. This is in accord with the results of (Shim and Lee, 1982 a & b) who reported an energy requirement of 2800kcal/ME/kg for young and laying quails respectively in the tropical regions. Whereas, an energy requirement of 2600-300kcal/ME/kg diet was reported for growing quails (Farrel et al, 1982). Feed intake increases with age, the older the bird and the higher the feed intake and vice versa.

Conclusion

It can be concluded that, the performance of quails under Northeastern Nigeria Climatic Condition is appreciable. Quails can successfully be raised in the region on commercial broiler diets rather than formulated layers diets. Quails production is profitable owing to its very tender, tasty and highly acceptable meat, uniform low cholesterol eggs and is a good quality meat for diabetic and high blood pressure patients, hence it is of public health importance.

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References

Agwunobi, L.N.and Ina-ibor .(2007). Processed rubber seed meal in the diet of growing Japanese quails (coturnix coturnix japonica). In sustainability of Livestock industry in an oil economy. Editors Aging, E.A., Agwunobi, L.N and Olawoyin O.O. *Proceedings of the 32nd annual conference of the Nigerian Society of animal production, Calabar, March 18-21, pp 86-388*

Bawa. G.S., Lombin, L.H., Karsin., Musa U., Payi. E and Shamaki. D. (2010) Response to Dept. of Primary Industries. www.dpi.nsw.gov.au/primefacts.602

Edache, J.A., Musa U., Karsin, P.D., Esilomu, J.O., Yisa A., Okpala, E.J. and Zwandor, N.J. (2007). Evaluation of the Performance of Growing Japanese Quails (Coturnix coturnix japonica) fed graded levels of banana peel meal. In: Sustainability of the Livestock Industry in an oil Economy (Editors, Agiang,

Edache, J.A.; Musa U.; Haruna E.S., Karsiu, P.D., Esilonu, J.O., and Jibrin , .I.I. (2007) Clacium requirement of Japanese quails (*coturnix coturnix japonica*) chicks in Plateau State, Nigeria. *Nigerian Journal of animal production* 32(2); 246-252. Japanese Breeder quails to varying dietary protein levels in the protics Mature Female. *Japanese quail for Egg*

Production. Japanese Poultry Science

Fah, S.K. (2005) The nutrition and management of Japanese quails (*coturnix coturnix Japonica)* in the tropic that quailplace www.thatquailplace.com

Farrel, D.J. Atmanihardia, S.I. and Pym, R.A.E. (1982) Calometric measurement of the energy and nitrogen metabolism of Japanese quail. *British Poultry Science, 23:376-382*

Haruna, E.S., Musa, U, Lombai, P.B., Pat, P., Shamaki, P.O., Okewale, P.A. and Ndokwu, J.U. (1997) Introduction of quail production in Nigeria. *Nigerian Veterinary Journal.* **18:104-107**

National Office of Statistics (1999): Annual Abstract of Statistics Lagos. Nigeria *Nigerian Journal of Production 43-43.*

Schwartz, R.W. and Allen, W.K. (1987). The Effect of Aging on the Protein Requirement of Mature Female. *Japanese quail for Egg Production, Japanese Poultry Science.*

Shim, K.F. (2007) The nutrition and management of Japanese (Coturnix) quail in the tropic. *Poultry Science, 61: 1991-1995*

SPSS (Statistical Package for Social Sciences, 1996) procedure and facilities Release 7.5 for windows New York

Sule, H.A. (2015) Correlation Coefficient on Internal egg quality parameters in Japanese quails (*coturnix coturnix Japonica*) fed two commercial broiler diets in Northeastern Nigeria. Proceeding of the 40th Annual Conferences of the Nigerian Society for Animal Production (NSAP) held at NAPRI/Ahmadu Bello University Zaria, between 15th-19th March, 2015. pp 64-67

Sule, H.A. et al (2015) Effect of production period on the external egg quality parameter in Japanese quails (*coturnix coturnix Japonica)* fed two commercial broiler diets, proceeding of the 29th Annual conference of Farm Management Association of Nigeria (FAMAN) Held at F.U.D. Dutse, Sept – 2015 pp 437-440

Sule, H.A. et al (2015) Effect of production period on the internal egg quality traits in Japanese quails (*coturnix coturnix Japonica*) fed two commercial broiler diets, proceeding of the 5th Nigeria International Poultry Submit, held at University of Ilorin, between 10th-11th May, 2015. pp XXXI – XXXIV

Table 1: Effect of Production Period on Growth Performance of Japanese Quails

Variable	Breed	No.	FCR	FE	FI (g)	LW (g)
Overall	Parents	160	16.42±0.15	6.14±00	2636.98±18.67	155.87±1.47
Overall	FI	140	32.56±0.44	316±0.00	4413.75±20.29	137.62±2.16
Production period						
	Parents		***	***	**	**
6-9 weeks		32	0.36	3.14^{b}	2492.48^{b}	155.87
10-18 weeks		72	0.36	2.51^{a}	2500.87^{b}	159.23
> 19 weeks		56	0.36	3.94^{c}	2617.60^{a}	152.51
Production Period						
	F1		NS	NS	*	NS
6-9weeks		12	0.20	3.16	4326.46^{b}	134.80
10-18weeks		72	0.19	3.15	4465.56^{a}	138.40
> 19 weeks		56	0.20	3.16	4449.23^{a}	139.67

FCR = Feed conversion ratio
Fe = Feed efficiency
FI = Feed intake
LW = live weight
LOS = level of significance
NS = Not Significant

* = P>0.05, ** = P>0.01, *** = P>0.001

a,b,c Means in homegenous subset having different superscripts are significantly different

Table 2: Effect of Production Period ns Diet Interaction on Growth Performance in Japanese Quail

Variable	Breed	No.	LW(g)	FI(kg)	FE	FCR
Overall	Parents	160	155.87±1.47	2536.98±18.67	0.36±0.15	2.83±0.00
Overall	FI	140	132.62±2.17	4413.75±20.29	0.76±0.44	3.16±0.00
Diets	Parents		NS	NS	NS	NS
1		80	156.02	2519.30	2.85	0.37
2		80	155.72	2554.65	2.82	0.36
Diets	F1		NS	NS	NS	NS
1		68	138.02	4425.40	3.16	0.76
2		72	137.22	4402.10	3.15	0.77

LOS = level of significance
NS = Not Significant