

Comparative Growth Performance of Japanese Quail (*Coturnix Japonica*) Fed with Home-Mixed and Commercial Ration

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ABSTRACT

The effect of home-mixed feed as compared to commercial feed on the performance of Japanese quail was examined. The trials were conducted for five weeks among randomly selected forty-day-old Japanese quails. A total of 40 Japanese quails were randomly distributed to two treatments were applied namely; T1 for commercial ration and T2 for home-mixed ration and replicated four times. They were individually placed in separate cages according to treatment. Data were gathered such as body weight gain (BWG), feed consumption (FC) and mortality rate (MR) weekly. Statistical analysis was computed using Analysis of Variance for Complete Randomized Design (CRD) through Statistical Package for Social Science Software (SPSS) version 20 with homogeneity of variance tests using Lavine's test. Findings revealed that Japanese quail under treatment of home-mixed ration has lower body weight gain compared to Japanese quail under commercial ration. Weekly weight gains of Japanese quail only showed significant differences on the first week of experimental feeding trial. The same observations were noted on feed conversion ratio, and no significant differences on feed intake were observed from both commercial and home-mixed ration. The study concluded that home-mixed and commercial ration has the same effects to growth performance of Japanese quail. It is then recommended that further studies will be conducted parallel to this study with varying environment. Moreover, this study will be encouraged in teaching among animal science students considering that people all over the world are diverting their attention towards the meat and eggs of other poultry species like quails, ostriches and emus to enhance per capita protein availability for human consumptions.

Keywords: growth, Japanese quail, types of feed

1. INTRODUCTION

Japanese quail played an active role in the lives of humanity since the 12th century, and continues to play major roles in industry and scientific research. According to Pappas (2013) the diet of the Japanese quail includes many different types of grass seed such as white millet and panicum. They also feed upon a variety of insects, their larvae, and other small invertebrates. Randal and Bolla (2013) mentioned that the exact dietary requirements of the Japanese quail are still controversial. A standard ration for either growing or breeding quail is not available commercially. Moreover, Babangida and Ubosi (2006) stressed out that quail raising has not attracted the interest of investors because there is lack of data with regards to feeding.

Study conducted by Rabie and Maaty (2015) on growth performance of Japanese quail as affected by dietary protein level and enzyme supplementation revealed that nutrient digestibility coefficients were significantly depressed when dietary CP level was decreased from 24-20% but added exogenous enzyme produced positive effects on digestibility of nutrients

examined. Neither dietary protein level nor enzyme addition had an effect on carcass traits or blood

According to Ijaiya et. al (2013) quails have lower feed requirement compared to the chicken and also require minimal space for rearing. The most necessary nutrient required for growth is energy even though energy itself is not changed into meat or eggs but used as fuel for getting high production (Mahmood, 2015). Slagtor and Waldroup (1990) said that the amount of feed consumed and ultimately the intake of essential nutrients is affective inversely with energy level.

On the other hand, quail raising is also affected with the environmental condition. Vali et al. (2005) as mentioned by Kar, Barman, Sen and Nath (2017) said that climate and natural condition should be very suitable for quail rearing. Many growers of quail and other poultry animals used different types of feeds depending on availability and local conditions. They also used alternative feeding materials of used mixed-feeding materials due high cost of conventional feed ingredients.

Animal science students and agriculturists usually find agricultural innovations particularly in animal husbandry and poultry. In this study, the researcher examined the effects of home-mixed feeds and

commercial feeds on the growth performance of quail. Quail farming is gaining much popularity due to unique flavors of its meat (Kayang et. al, 2004), relatively low investment, resistance to diseases and quick weight respond to genetic selection (Yalcin, et.al, 1995; Oguz & Minvielle, 2001).

2. MATERIALS AND METHODS

a. Research Design

This study employed a complete randomized design with 2 treatments and 4 replications to determine the effect of home-mixed and commercial feeds on the growth performance of Japanese quail (treatment 1 = commercial feed treatment; treatment 2 = home-mixed ration).

b. Feeding Ration and Feeding Management

Table 1 show the composition and calculated analysis of Home-mixed and Commercial Rations. During experiment, quail were feed Ad libitum with home-mixed ration and commercial feed from period of 7 to 42 days. Experimental quail were acclimatized for 7 days prior to feeding of home-mixed ration. To ensure unlimited feeding, feeders were checked and refilled twice daily during 7:30 AM and 4:00 PM. Fresh, clean water were assured available all times throughout the experimental trial.

Table 1 Home-Mixed and Commercial Rations

	TREATMENT			
	Commercial	Home-mixed	Commercial	Home-mixed
	BOOSTER (1-21 days)		STARTER (22-42 days)	
Feed Ingredients (%)				
Copra meal	20.00		18.25	
Corn bran	23.25		28.50	
Rice bran	22.50		24.50	
Fish meal	23.50		17.50	
Corn grits	10.25		10.50	
Salt	1.00		1.00	
Calculated Analysis (%)				
Dry matter	82.32		88.57	
Crude protein	22.11		22.15	
Crude fat	8.75		8.56	
Crude fiber	6.62		6.99	
Ash				
Calcium	1.25		1.35	
Phosphorous	1.06		1.06	

c. Housing and Facilities

Experimental birds (quail) were individually placed in separate cages according to treatments. House was made of wood with nipa shingles as roofing, and plastics sheath as flooring. Proper lighting was securely provided to each of the cages. Feeders and drinkers were evenly distributed to every treatment.

d. Data Collection

Body weight gain, total feed consumption and feed conversion ratio and mortality rate were gathered weekly throughout the experiment.

e. Data Analysis

Analysis of Variance (ANOVA) for Complete Randomized Design (CRD) was used to determine the effects of the home-mixed feed on the growth performance of the quail. All collected data were processed and analyzed using SPSS version 20 with homogeneity of variance tests using Lavine’s test.

3. RESULTS AND DISCUSSION

a. Growth Performance of Quails in Terms of Weight Gain

The results presented in Table 2 shows that lower body weight gain observed from home-mixed ration compared to commercial diet. This can be reflected to the lower CP content found in both booster and starter diet from home-mixed ration. Research findings of Rabie and El-Maaty (2015) has similar results stating that decreasing the CP level from 24-20% on quail’s diet significantly caused reductions in growth performance of Japanese quail. Mean (\pm) standard error of mean of weekly body weight gain of Japanese quail fed with home-mixed and commercial diet (Table 3). Mean within the same column having superscripts means differ significantly ($P \leq 0.05$).

Table 2 Weekly Body Weight Gain of Quail in Gram

Period	Weight in Grams	
	Commercial Ration	Home-mixed Ration
Week 1	17.80 \pm 1.01	13.57 \pm 0.78**
Week 2	16.00 \pm 2.91	14.50 \pm 2.64
Week 3	27.20 \pm 3.12	21.95 \pm 2.36
Week 4	22.05 \pm 0.74	19.44 \pm 1.21
Week 5	12.30 \pm 2.54	10.96 \pm 2.09

Table 3 Analysis of Variance on Weekly Body Weight Gain of Quail in Gram

Period		Analysis of Variance		
		Mean Square	F value	Significant value
Week 1	Between groups	35.701	10.858	0.17
	Within Groups	3.388		
Week 2	Between groups	55.125	1.800	0.228
	Within Groups	30.633		
Week 3	Between groups	55.125	1.800	0.228
	Within Groups	30.633		
Week 4	Between groups	55.125	1.800	0.228
	Within Groups	30.633		
Week 5	Between groups	3.605	0.167	0.697
	Within Groups	21.647		

b. Performance of Quails in Terms of Feed

Consumption

The result of feed intake obtained in this study showed that higher feed intake was observed from quail fed with home-mixed ration compared to commercial diet (Table 4). However, differences observed on feed intake from the two treatments did not show significant differences based on the computation of Analysis of Variance.

Table 4 Weekly Feed Consumption of Quail in Gram

Period	Weight in Grams	
	Commercial Ration	Home-mixed Ration
Week 1	64.45	66.98
Week 2	75.50	99.60
Week 3	84.40	136.87
Week 4	96.50	152.69
Week 5	112.60	170.19

c. Performance of Quails in terms of Feed

Conversion Ratio

The result of feed conversion ratio obtained from the study showed that the body weight gain of the quail was only prominent on the first week of feeding trial. On the other hand, low feed conversion found in home-mixed fed quails were the results of low CP content to higher feed intake to compensate energy requirements which turned out to low equivalent of FCR. In general, based on the results presented in Table 2, Table 3, and Table 4, weekly weight gains of Japanese quail only showed differences on the first week of experimental feeding trial.

The same observations were noted on feed conversion ratio. However, results showed no significant differences on body weight gain, feed intake/consumption, and feed conversion ratio for both commercial and home-mixed ration throughout the experimental period (Table 5, Table 6, Table 7).

Table 5 Analysis of Variance on Feed Consumption of quail in gram

Period		Analysis of Variance		
		Mean Square	F value	Significant value
Week 1	Between groups	1.001	0.058	0.818
	Within Groups	17.266		
Week 2	Between groups	92.957	1.467	0.271
	Within Groups	62.366		
Week 3	Between groups	47.191	0.981	0.360
	Within Groups	48.112		
Week 4	Between groups	72.00	0.469	0.519
	Within Groups	153.566		
Week 5	Between groups	0.925	0.017	0.902
	Within Groups	55.865		

Table 6 Weekly Feed Conversion Ratio of Quail in Gram

Period	Weight in Grams	
	Commercial Ration	Home-mixed Ration
Week 1	2.60 ± 0.14	3.37 ± 0.26**
Week 2	3.96 ± 1.09	4.60 ± 0.82
Week 3	3.13 ± 0.06	3.03 ± 0.29
Week 4	3.96 ± 0.59	3.95 ± 0.61
Week 5	7.98 ± 2.40	8.38 ± 2.07

Table 7 Analysis of Variance on Feed Conversion Ratio in Gram

Period		Analysis of Variance		
		Mean Square	F value	Significant value
Week 1	Between groups	1.194	6.764	0.041
	Within Groups	0.176		
Week 2	Between groups	0.845	0.228	0.650
	Within Groups	3.703		
Week 3	Between groups	1.148	5.108	0.065
	Within Groups	0.225		
Week 4	Between groups	1.361	1.830	0.225
	Within Groups	0.744		
Week 5	Between groups	0.340	0.017	0.901
	Within Groups	20.099		

4. CONCLUSION

Based on the results of the study, it is concluded that home-mixed ration and commercial ration has the same effects on the growth performance of quail. It is then recommended that further study will be conducted parallel to this study with varying environmental condition where the quail is housed.

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