

Feed Types and Doses on The Growth Performance of Pigeon Squabs

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ABSTRACT

A two-way ANOVA examined the effects of feed (control, broiler feed with commercial feed, broiler feed with grit) and amount of feed (high (20 g/day/pigeon), low (10 g/day/pigeon)) on squab growth with equal cell sizes (n=20 per cell; N=120). Assumption checks indicated serious violations: residuals were not approximately normal (Shapiro-Wilk $p=0.016$) and variances were not homogenous (median-based Levene's test), $p < 0.05$. The analysis showed a large main effect of feed, $F(2,114) = 1077.61$, $p < 0.001$, in amount, $F(1,114) = 26.02$, $p < 0.001$, and in feed-amount ratio, $F(1,114) = 43.51$. The interaction was significant in broiler feed and broiler feed with grit, $F(2,114) = 9.149$, $p = 0.001$. Descriptively, growth of squabs was higher under low amount of broiler feed and broiler feed and grit (egg shell, oyster, brick, lime stone, etc.) ($M=82$), broiler feed and control ($M=55$), and broiler feed with grit and control ($M=137.1$). Tukey-adjusted simple effects aligned with these patterns: within each amount of feed (high, low), both broiler feed and grit were significant (all $ps < 0.05$). Cell means (M , SE) were: control-high 262 (3.98), control-low 280 (2.78), broiler feed-high 415 (3.02), broiler feed-low 417 (2.30), broiler feed + grit-high 415 (3.02), broiler feed + grit-low 417 (2.30).

Keywords: Pigeon, Pigeon Industry, Squab, Feed Types, Dose, Growth

INTRODUCTION

Food is the main issue to get profit from a farm and is related with all sorts of biological activities. There are many branded feed and probiotic premix available in the world. Probiotics are helpful to boost digestive system, prebiotics are for dietary fibres, and symbiosis controls overall biological activities. This feed ensures sufficient nutrients for the animals as well as pigeons. In fact, broiler starter, grower, and finisher are not allowed to pigeon but a small amount could provide for growth of certain breeds for the short time. Grit acts both digestive aid and mineral source mainly for cage-reared pigeons. There are two types of grits—soluble (egg shell, oyster shell, etc.) and insoluble (quartz, granite, etc.). A suitable mixture is an essential part of the pigeon diet, as all the grains and seeds are found with low minerals [1]. Mineral mixtures commonly contain a

Vol No: 10, Issue: 04

Received Date: August 12, 2026

Published Date: October 29, 2026

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Citation: Kabir A. (2026). Feed Types and Doses on The Growth Performance of Pigeon Squabs. Mathews J Vet Sci. 10(4):116.

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variety of ingredients such as oyster shell, charcoal, granite grit, salt, limestone, bone meal, venetian red, and such additional products are gentian red, anise seed, and sulphur [2]. Excess protein and fat caused liver disease and obesity. Pigeons have lactose intolerance, so they cannot absorb any milk products. Bristles of paddy make a micro-injury in the throat and causes canker parasite. Rice is not suitable for pigeons because this is actually 'junk food' and it makes 'false fullness' of pigeon. Boiled egg scramble is good for breeding and moulting pigeons but once or twice in a week. Due to lack of gall bladder, pigeon use their bile juice directly on the oilseeds; can get more energy [3]. The objective of this write-up is to focus the effect of as usual commercial feed with broiler feed and grit with low and high amount on the growth performance of squabs.

MATERIALS AND METHODS

Pigeon Breeds

For this study, local pigeon (gola) (Plate 1), tumbler (Dhaka, Rajshahi), lotans (local, Indian), Indian bombai, mooker, satinette, and racing homer were kept to apply commercial feed, broiler feed, and grit twice in a day to observe the weight of their squabs.

Statistical Analyses

The codes of RStudio were used for the completion of two-way ANOVA to determine the effect of three types of feed on the growth of squab of above pigeons.



Plate 1. Squab of gola pigeon (local pigeon of Bangladesh)

RESULTS

Mean Body Weight Corresponding with Three Groups

In Bangladesh, pigeon breeders provide commercial feed of the market (Plate 1), and those feed items are mixed with

wheat, corn, sunflower seed, rapeseed, mustard, and millet. When pigeons were provided with this feed mixture, were considered as control group. The effect of broiler feed is more effective than the broiler feed versus grit and control group.

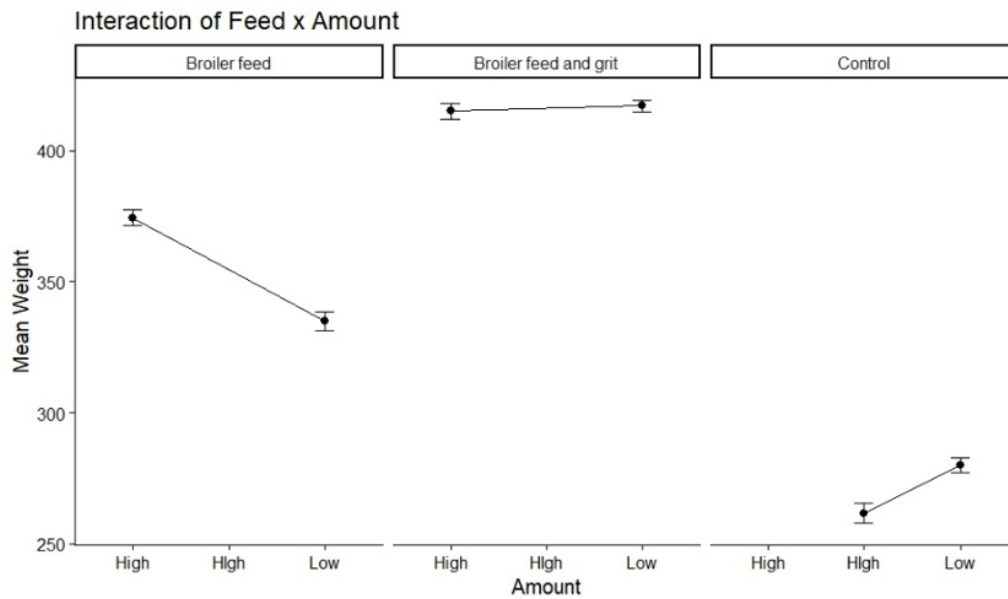


Figure 1: Different doses of feed on the mean weight of squab

Homogeneity of Variance

Following plot showed the data with normal distribution, so homogeneity of variance has maintained during this

study. Residuals and fitted data showed that there were only few data were outliers; others were in normal distribution between groups and weight of pigeons.

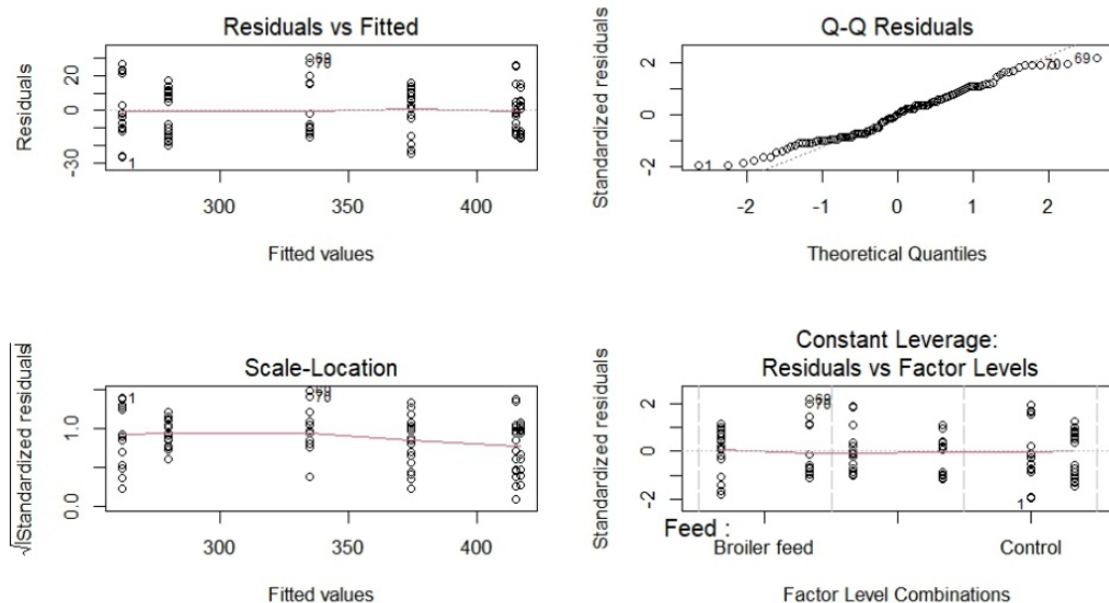


Figure 2: Status of data distribution

Significance Test

The result of two-way ANOVA suggested that there were significant differences between and within group of pigeons (control, treatment-1, treatment-2) ($p < 0.001$) at 114 degrees of freedom, so null hypothesis is rejected. It is obviously true

that provided commercial feed to pigeon, commercial feed with broiler feed, and grit mix with commercial feed and broiler feed, the growth of pigeons was increased.

Table 1: Two-way ANOVA

Term	Sum of square	df	Statistics	p-value
Feed	198161.83	2	503.096	<0.001***
Amount	10250.67	2	26.025	<0.001***
Feed : Amount	8569.80	1	43.514	<0.001***
Residuals	22451.45	114	NA	NA

*P <0.001 at significant level

DISCUSSION

These findings demonstrate that dietary supplementation significantly influences squab growth. Broiler feed increased body weight due to its higher protein content. Without grit the squab weight at 28 days only 5-7 ounces, while providing grit this weight was noticed 16-20 ounces [4]. Oyster shell was mixed with salt and charcoal, weight increased averaging 17.4 ounces instead of 11.3 [2]. It is suggested that high crude protein level can promote the growth performance of pigeon squabs, which is similar to the results of the studies on broilers [5,6]. Using 16% CP crude protein level for artificially feeding squabs during the late stage of growth is recommended [7]. Under natural parental feeding, squab's growth rate declines significantly after day 21 [8,9]. In fact, broiler feed is not suitable for the pigeons for its higher protein content [10]. Home-made grits are always good for the growth performance of pigeons [11]. One kg broiler grower feed with other components, showed 91.25% growth rate at the 3rd week of age of squab [12]. Studies in poultry have shown that increasing dietary protein improves growth performance within optimal limits [5,13]. Kabir et al. [14] described a paper on the growth performance of squab by providing broiler feed and grit with the commercial feed at the markets.

CONCLUSIONS

Actual meat pigeon breed is gola in Bangladesh. In order to get sufficient profit to sell squab for meat, it is necessary to provide low dose of grower broiler feed and grits. Most pigeon breeders of Bangladesh provide excellent feed ratio with probiotic premix for their breeds. This study confirms that the combination of commercial feed, broiler feed, and grit with low dose significantly improves the growth of squabs. However, broiler feed should be used cautiously due to its high protein content and formulation for poultry rather than pigeons. Grit supplementation is strongly recommended as a

safe and effective dietary component. Future studies should be recommended on larger sample size of pigeon, longer experimental duration, and breed-specific.

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