

Effect of Beak Trimming on Growth Performance of Japanese Quail Chicks



Veterinary science

KEYWORDS : Japanese quails, beak trimming, growth

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ABSTRACT

An experiment was conducted to study the effect of beak trimming on growth performance of Japanese quail chicks from zero to six weeks of age. One thousand five hundred (1500), day-old Japanese quail chicks were allotted randomly to three treatment groups viz; T₁, T₂ and T₃ with five replicates of hundred quails each. Chicks in T₁ were the control group without beak trimming. Chicks in T₂ and T₃ were beak trimmed at 7th and 14th day of age respectively. Individual body weight of all birds in each replicate was recorded at day-old and at weekly intervals up to six weeks. The mean body weight of quails up to three weeks of age did not differ significantly between treatment groups, while it was higher in T₃ than T₂ during the later stage of growth. The returns per quail housed over feed and chick cost was higher in the beak trimmed groups. The results of the present study suggest that beak trimming can be practiced at fourteenth day of age for rearing quail chicks up to six weeks of age.

INTRODUCTION

India is the third largest producer of eggs in the world with a total production of 61.5 billion eggs per year (FAO, 2010). However the per capita availability is only 48.4 eggs which is far below the level of 180 eggs recommended by the Indian Council of Medical Research. (FAO, 2007). In this context, boosting the egg production from other avian species like quail offers vast scope for bridging this wide gap between demand and supply. Quail meat has been fetching the farmers a reasonable price in Kerala. Japanese quail meat is considered a delicacy.

Domestication has not substantially altered the pecking behaviour of quails. Japanese quails show aggressive characters of pecking and maintains a peck order in a flock. A few research studies conducted in Japanese quails revealed that beak trimming could reduce the incidence of pecking and thus reduce mortality. The reports on the effect of beak trimming at different ages on growth performance of quails are scanty. Hence an experiment was conducted to evaluate this effect from zero to six weeks of age.

MATERIALS AND METHODS

A total number of one thousand five hundred (1500) day-old quail chicks belonging to a single hatch were utilized for the experiment. The quail chicks were grouped in to three treatments viz, T₁, T₂ and T₃, each with five replicates of 100 chicks. Chicks in T₁ formed the control group and were kept without beak trimming. Chicks in group T₂ and T₃ were beak trimmed one-third the length of beak at seventh and fourteenth days of age respectively. Individual body weight of all birds in each replicate was recorded at day-old, and at weekly intervals up to six weeks of age and the mean values were calculated. The cumulative feed consumption in each replicate from zero to three weeks and from four to six weeks was recorded and the mean feed consumption per quail was calculated from this data. The cumulative feed conversion ratio in each replicate up to three weeks and from four to six weeks was calculated as the ratio of feed consumed (kg) to the weight gain (kg).

Initially the quail chicks in each replicate were housed in battery brooders with a floor space area of 54cm² per chick. At the end of two weeks of age they were shifted to grower cages with floor space of 96cm² per chick and reared up to six weeks of age. They were fed on quail starter diet having 24 per cent CP and 2750 kcal/kg ME during the period of study. Data collected on various parameters were statistically analyzed as described by Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

BODY WEIGHT

The body weight of quails in control and beak trimmed groups did not differ significantly from day-old to three weeks of age (Table 1). The body weight of quail chicks recorded at first and second weeks of age is similar to the values reported by Shanaway (1994) in Japanese quail chicks of the same age groups. The mean body weight of quails at third week of age is close to the value reported by Padwal (2010). The present finding on body weight of quails in the early growth period indicated that beak trimming at seventh or fourteenth day of age did not adversely affect the growth of quail chicks during the early phase.

The data on mean body weight of female quails from four to six weeks of age revealed that T₂ had significantly ($p \leq 0.05$) lower body weight than quails in the control group (T₁) at fourth week of age but comparable body weight at fifth and sixth weeks of age. In the case of male quails T₂ had significantly ($p \leq 0.05$) lower body weight than the control group at fifth and sixth weeks of age. The quails in T₃ showed statistically comparable body weight with the control group at fourth, fifth and sixth weeks of age in both sexes.

The findings on body weight indicate that beak trimming of quails at 14th day of age is advantageous for optimum growth.

FEED CONSUMPTION

Particulars	T ₁	T ₂	T ₃
	Control (Without beak trimming)	7 th day Beak trimming	14 th day Beak trimming
Cost of chick (Rs.)	6	6	6
Feed cost (Rs./kg)	20.5	20.5	20.5
Total feed consumption (kg)	0.729	0.715	0.718
Total feed cost (Rs.)	14.94	14.66	14.72
Total cost of production (Rs.)	20.94	20.66	20.72
Sale price of chick (Rs.)	22	22	22
Returns over feed cost (Rs.)	7.06	7.34	7.28
Returns over feed and chick cost at 6 weeks (Rs.)	1.06	1.34	1.28

The cumulative feed consumption up to three weeks of age, presented in Table 2 was significantly ($p \leq 0.05$) lower in the 7th day beak trimmed group (T_2) compared to the control group (T_1) and the 14th day beak trimmed group (T_3). Data on the cumulative feed consumption from 4-6 weeks revealed that there was significant ($p \leq 0.05$) reduction in feed consumption in the beak trimmed groups than the control group. However the low feed consumption did not adversely affect the growth of beak trimmed chicks during growing period.

FEED CONVERSION RATIO (FCR)

The feed conversion ratio of the control and beak trimmed groups during the growth period presented in the Table 2 indicated that the values were statistically similar in all the groups.

The cumulative mean FCR values for the growth period were better than that reported by Shanaway (1994) and Padwal (2010). Hakim et al (2009), Vali (2009) and Azeem and Azeem (2010) observed better feed efficiencies for the period.

COST AND RETURN

The data presented in Table 3 detailed the expenditure incurred for various items, returns obtained and the margin per quail housed during growing period 0 to 6 weeks. During this period, the reduction in feed consumption in the beak trimmed groups resulted in a slight reduction in cost of raising quail chicks. The return over chick and feed cost per quail at six weeks of age indicated an increase of 28 and 22 paise in T_2 and T_3 groups than the control group.

Table 1. Mean ($\pm$ SE) body weight of Japanese quail chicks as influenced by beak trimming at 7th and 14th day of age

Treatment Groups			0*	1*	2*	3*	4		5		6	
							Female	Male	Female	Male	Female	Male
T_1	Control	(Without beak trimming)	7.58 $\pm$ 0.03	19.95 $\pm$ 0.15	47.34 $\pm$ 0.25	84.18 $\pm$ 1.14	154.01 ^a $\pm$ 2.71	142.9 $\pm$ 2.05	168.34 $\pm$ 1.49	152.39 ^a $\pm$ 1.79	188.03 ^{ab} $\pm$ 2.18	166.84 ^a $\pm$ 2.16
T_2	7 th day	Beak trimming	7.5 $\pm$ 0.53	20.16 $\pm$ 0.17	47.23 $\pm$ 0.79	85.13 $\pm$ 1.21	147.53 ^b $\pm$ 2.13	138.5 $\pm$ 1.75	168.45 $\pm$ 1.09	147.85 ^b $\pm$ 1.40	183.09 ^b $\pm$ 1.26	157.06 ^b $\pm$ 2.47
T_3	14 th day	Beak trimming	7.59 $\pm$ 0.05	20.51 $\pm$ 0.25	47.67 $\pm$ 0.27	84.52 $\pm$ 1.06	153.73 ^a $\pm$ 1.10	142.8 $\pm$ 2.11	171.97 $\pm$ 1.07	153.00 ^a $\pm$ 1.41	191.70 ^a $\pm$ 2.02	163.73 ^a $\pm$ 2.11

* Body weight of unsexed quail chicks

Table 2. Feed consumption and feed conversion ratio of Japanese quail chicks as influenced by beak trimming at 7th and 14th day of age

Feed Consumption				
Treatment Groups			0-3 Weeks Cumulative	4-6 Weeks Cumulative
T_1	Control	(Without beak trimming)	222.60 ^a $\pm$ 1.12	495.22 ^a $\pm$ 1.99
T_2	7 th day	Beak trimming	213.68 ^b $\pm$ 0.82	489.02 ^b $\pm$ 1.80
T_3	14 th day	Beak trimming	220.36 ^a $\pm$ 0.81	486.92 ^b $\pm$ 1.23
Feed Conversion Ratio				
T_1	Control	(Without beak trimming)	2.75 $\pm$ 0.05	4.73 $\pm$ 0.22
T_2	7 th day	Beak trimming	2.87 $\pm$ 0.03	5.01 $\pm$ 0.16
T_3	14 th day	Beak trimming	2.84 $\pm$ 0.03	4.54 $\pm$ 0.10

Treatment Groups			1	2	3	4	5	6	6 Weeks Average
T_1	Control	(Without beak trimming)	98.6 $\pm$ 0.24	97.6 $\pm$ 0.51	98 $\pm$ 0.89	98.8 $\pm$ 0.58	100 $\pm$ 0.00	99.33 $\pm$ 0.67	98.8 $\pm$ 0.22
T_2	7 th day	Beak trimming	97.8 $\pm$ 0.58	97.8 $\pm$ 1.02	96.2 $\pm$ 1.28	99.6 $\pm$ 0.24	100 $\pm$ 0.00	100 $\pm$ 0.00	98.56 $\pm$ 0.34
T_3	14 th day	Beak trimming	99 $\pm$ 0.45	99.4 $\pm$ 0.24	98.2 $\pm$ 0.86	98.4 $\pm$ 1.17	100 $\pm$ 0.00	100 $\pm$ 0.00	99.17 $\pm$ 0.23

Table 3. Mean ($\pm$ SE) livability of Japanese quail chicks as influenced by beak trimming at 7th and 14th day of age

LIVABILITY

The per cent livability was comparable among the beak trimmed groups (T₂ and T₃) and the control group (T₁).

The mean livability value for the growth period was also statistically similar in all the groups. The highest livability value (99.17 per cent) was observed were in T3, while T1 and T2 had values 98.80 and 98.56 per cent respectively. Shamna (2008) reported a similar mean livability per cent ranging from 97.90 to 100.00 from 0 to 6 weeks of age in Japanese quails.

CONCLUSION

Considering the growth performance, cost and returns and livability, it could be concluded that beak trimming at 14th day of age is advantageous in rearing quail chicks in large flocks.

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