

EFFECT OF FLOOR SPACE ON EGG WEIGHT AND EGG QUALITY TRAITS OF JAPANESE QUAILS REARED IN CAGES AND DEEP LITTER

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The importance of quails in the poultry scenario of India was recognised and quail production has registered a remarkable progress in India since its introduction during the mid seventies.

Layer type and broiler type strains of Japanese quails have been recognised and published work in the area of egg weight and egg quality traits is very meagre. Hence a study was conducted to assess the effect of the systems of rearing and floor space allowance on egg weight and egg quality parameters of Japanese quails.

Materials and Methods

Three hundred and twenty eight Japanese quails of five weeks of age from the same hatch were housed in cages with floor space allowance of 100, 150, 200 and 250 sq. cm. per bird and in deep litter providing 150, 200 and 250 sq cm with four replicates in each treatment group. Feed and water were given *ad lib*. A standard

quail mash was provided throughout the experimental period following standard managerial practices.

Egg weight, based on weight of eggs produced during the last three days in each period and egg quality parameters such as shape index, shell thickness, albumin index, yolk index and Haugh unit were studied during the experiment. All eggs from each replicate during the last three consecutive days in each period were weighed and mean egg weight was calculated. Two eggs from each replicate were taken at random during the last three days of each period. They were marked, weighed individually and stored in refrigerator over night for conducting internal quality studies in the next day. The data were analysed as per standard statistical procedures.

Results and Discussion

The results obtained in the study are presented in Table 1.

Table 1 Summary of egg weight and egg quality traits in Japanese quails in cages and deep litter

Sl.No.	Parameters	Overall mean value	
		Cages	Deep litter
1	Mean egg weight	10.61±0.09 ^x	10.19±0.11 ^y
2	Shape index	78.89±0.15 ^x	78.85±0.28 ^x
3	Albumin index	0.100±0.002 ^x	0.103±0.002 [*]
4	Yolk index	0.477±0.0005 ^x	0.449±0.005 ^x
5	Shell thickness (mm)	0.224±0.002 ^x	0.221±0.008 ^x
6	Haugh unit	52.64±0.82 ^x	54.19±0.77 ^x

Means bearing same superscript did not differ significantly ($P < 0.05$)

Quails reared in cages laid significantly heavier eggs (10.61 g) in comparison to those from deep litter reared one (10.19 g). This finding is in agreement with that of Chidananda *et al.* (1986) and Mahapatra *et al.* (1988).

It was further observed that housing density significantly influenced this trait. But Nagarajan *et al.* (1990) reported that there was no significant difference in the weight of eggs among the birds reared in different densities. In deep litter, the analysis revealed that the different floor space allowances did not significantly affect egg weight.

The various egg quality traits like the shape index, albumin index, yolk index, shell thickness and Haugh unit were not significantly affected by the system of housing. These findings were in agreement with that of Mahapatra *et al.* (1988), Bandyopadhyaya and Ahuja (1990) and Viswanathan (1992). In both the systems of rearing the different floor space allowances provided significantly affected the shape index of eggs. Bandyopadhyaya and Ahuja (1990) also had similar findings. Same was the trend of findings in respect to albumin index. Viswanathan (1992) reported similar findings.

As for the yolk index, the present study has shown that in both the cages and deep litter system of rearing, the different treatments did not significantly affect this trait. But Nagarajan *et al.* (1991) and Viswanathan (1992) observed highly significant ($P < 0.01$) differences in yolk index values between the different floor space allowances studied. Differences in the strains utilised for investigations by the workers might explain for these contrasting observations. The different floor density treatments in cages and deep litter did not significantly affect the shell thickness. But Viswanathan (1992) reported that difference in floor densities in cages significantly affected the shell thickness, but not in deep litter. Neither the system of housing nor the different floor space allowances

significantly affected the Haugh unit score of Japanese quail eggs.

But the observations of the present study is in variance with that of Bandyopadhyaya and Ahuja (1990) who observed that cage density did significantly affect Haugh Unit Score. This can possibly be explained by the strain x housing density interactions.

Summary

In order to suggest a suitable system and optimum floor space allowance for Japanese quail rearing so as to have better egg weight and other egg quality traits, a study was carried out to evaluate the performance of quails reared in cages and deep litter with different floor densities.

In the cage system of rearing the floor densities evaluated were 100, 150, 200 and 250 sq cm and in deep litter system 150, 200 and 250 sq cm per bird. The experiment was carried out from fifth week to 50th week of age under uniform managerial practices and the data were recorded for nine, 35 day periods.

Quails reared in cages laid heavier eggs compared to those in deep litter. But the egg quality traits like the shape index, albumin index, yolk index, shell thickness and Haugh Unit were not significantly affected by the system of housing. In both the systems of rearing, the different floor space allowance provided significantly affected only the shape index of eggs.

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