

EFFECT OF FLOOR DENSITY ON PRODUCTION PERFORMANCE OF JAPANESE QUAILS REARED IN CAGES AND DEEP LITTER

B. Padmakumar, G. Reghunathan Nair, A. Ramakrishnan
A.K.K. Unni and N. Ravindranathan

Centre for advanced studies in Poultry science

College of Veterinary and Animal Sciences, Mannuthy, Thrissur - 680 651

Quails are blessed with several desirable characters like fast growth, early sexual maturity, high rate of egg production, short generation interval, requirement of less floor space, short incubation period and less susceptibility to diseases. Generally quails are reared in multi-tier cages both during growing and laying periods. The convenience in handling and conservation of space and energy are major advantages with this system. However, quails are also being reared on floor equally well. The research work carried out on the stocking density of quails under different systems of management under tropical conditions is scanty. So the present study was carried out to evaluate the effect of floor density on production performance on Japanese quails reared in cages and deep litter and to suggest the ideal system of rearing and the optimum floor space to elicit the maximum response.

Materials and Methods

Three hundred and twenty eight Japanese quails in the cage group of five weeks from the

same hatch were housed in cages providing 100, 150, 200 and 250 sq.cm. per bird and in deep litter providing 150, 200 and 250 sq.cm. For each treatment group, four replicates were provided. The quails were on a standard quail mash throughout the experimental period. Feed and water were given *ad lib.* and standard managerial practices were followed throughout the period of study.

The production performance of the birds were studied for nine, 35 day periods from five to 50 weeks of age during the period from April, 1992 to February, 1993. Body weight, age at first egg, percentage egg production, feed consumption, feed efficiency, and per cent livability were the major traits considered for evaluation.

Results and discussion

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

Table 1 Summary of production performance in Japanese quails in cages and deep litter

Sl. No.	Parameters	Overall mean value	
		Cages	Deep litter
1	Body weight (g)	168.80 ± 4.38 ^x	167.79 ± 5.18 ^x
2	Age at first egg(days)	57.44 ± 1.05 ^x	70.33 ± 3.84 ^y
3	Age at 10 per cent production (days)	61.75 ± 2.30 ^x	73.42 ± 3.85 ^y
4	Age at 50 per cent production (days)	88.75 ± 4.55 ^x	103.75 ± 3.59 ^y
5	Per cent egg production	46.71 ± 3.37 ^x	38.90 ± 4.25 ^x
6	Mean daily feed consumption/bird (g)	23.24 ± 0.32 ^x	23.38 ± 0.40 ^x
7	Feed efficiency(kg feed per dozen eggs)	1.32 ± 0.38 ^x	1.34 ± 0.41 ^x
8	Livability (%)	97.23 ± 0.56 ^x	97.26 ± 0.69

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

The overall mean body weights were not significantly influenced by the two systems of rearing. But the birds in cages had a tendency to achieve more body weight than those in deep litter. Viswanathan (1992) observed that cage reared birds had significantly higher body weights compared to deep litter reared ones. The age at sexual maturity, as measured by the age at first egg and the age at 10 per cent production, was earlier in cage than on litter. Moreover, when the age at sexual maturity was reckoned as at 50 per cent production, cage rearing was found to be superior. By and large, the floor density allowances provided either under deep litter system or in cages had very little effect on the age at sexual maturity arrived at any three of these yardsticks. Chidananda *et al.* (1986) and Viswanathan (1992) had similar findings with respect to the age at 50% production in their study comparing the systems of management. The per cent egg production was comparable in the two systems of rearing even though a numerical advantage was observed in the cage system.

In both the system of rearing, increase in floor space had a significant effect on egg production. The results of this study are in agreement with those of Ernst and Coleman (1964), Bandyopadhyaya and Ahuja (1990), Nagarajan *et al.* (1990) and Viswanathan (1992).

The overall average feed consumption in cages and deep litter were 23.24 g and 23.38 g and the difference was statistically nonsignificant. These values were similar to those observed by Panda *et al.* (1977) and Viswanathan (1992).

The average feed efficiency (kg feed per dozen eggs) in cage and litter reared birds were 1.32 and 1.34 and were statistically not significant. The observations of Ernst and Coleman (1964) and Chidananda *et al.* (1985) are comparable with the present study. But

according to Narahari *et al.* (1986) and Viswanathan (1992) there is highly significant difference in feed efficiency between cage and deep litter reared quails. In cage and deep litter system of rearing, floor space allowances did not significantly affect the feed consumption and feed efficiency.

Rearing systems and different floor space allowances have failed to exert any significant influence on the livability per cent in this study. Chidananda *et al.* (1985) was also of the opinion that systems of rearing had little effect on the livability per cent in Japanese quails.

Summary

To suggest a suitable system of rearing and optimum floor space allowance for Japanese quail rearing so as to reduce housing cost and to achieve better efficiency, a study was carried out to evaluate the production performance of quails reared in cages and deep litter with different floor densities.

In 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 the fifth week of age to 50th week of age, each group with four replications. Except for the difference in floor densities, all the management practices followed were the same and the data were recorded for nine, 35 day periods.

The system of housing had no effect on the body weight, but an increase in floor space resulted in a hike in body weight. Age at first egg, at 10 per cent production and at 50 per cent production were not influenced by the type of housing. In deep litter system, they were significantly affected by the different densities, but not in cage system of rearing. System of housing did not affect the egg production. But in cages, different floor densities significantly affected this trait. The mean daily feed

consumption was not affected by the system of housing. But the different floor densities in cages and deep litter had significant effect on feed consumption. System of housing and floor density variation had no effect on feed efficiency and per cent livability.

Assessing the overall results obtained it is concluded that layer quails can be raised with advantage either in cage or in deep litter notwithstanding the slight edge that cage system has with a floor space allowance of 200 sq.cm. per bird.

References

- Bandyopadhyaya, U.K. and Ahuja, S.D. (1990). Effect of cage density on some of the performance traits in Japanese quail. *Indian J. Poult. Sci.* 25(2): 123-128
- Chidananda, B.G., Prathapkumar, K.S., Sreenivasaiah, P.V., Ramappa, B.S. and Lokanath, G.R. (1986). Comparative performance of Japanese quails in cage and deep litter (2) Egg production and reproduction traits. *Indian J. Poult. Sci.* 21(2): 91-96
- Ernst, R.A. and Coleman, T.H. (1964). Influence of floor space on growth, egg production, fertility and hatchability of the *Coturnix coturnix japonica*. *Poult. Sci.* 43(4): 1316
- Nagarajan, S., Ramamurthy, N., Viswanathan, S., Thangavel, A., Muruganandham, B., Sundararasu, V. and Mujeer, K.A. (1986). Effect of rearing system and marketing age on the performance of Japanese quail. *Cheiron.* 15(5): 160-163
- Nagarajan, S., Narahari, D., Jayaprasad, L.A. and Thyagarajan, D. (1990). Laying performance of Japanese quail hens under different stocking densities. *Indian J. Poult. Sci.* 60(12): 1467-1470
- Panda, B., Reddy, V.R. and Sadagopan, V.R. (1977). Nutrient requirements and feeding of Japanese quail. *Indian Poult. Gaz.* 61(4): 151-172
- Viswanathan, K. (1992). Productive efficiency of Japanese quails. *Ph.D. Thesis*, Tamil Nadu Veterinary and Animal Sciences University, Madras.