

PERFORMANCE OF WHITE LEGHORN LAYERS IN CAGES

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There is an increased trend in our country to switch over from the conventional deep litter to cage system of rearing layers for commercial egg production. The performance of layers are influenced by system of housing, stock density and also by weather conditions.

The weather conditions are known to have a critical role in determining the production efficiency of the birds and have considerable effect on egg production and livability of chicken. While information on influence of different housing systems and bird densities on layer performance are available in the literature (Reddy *et al.*, 1981, Prasad *et al.*, 1984, Bhat and Aggarwal, 1989) but the performance of commercial egg type chicken under cage system is very limited (Kansal and Gangwar, 1983). Therefore the present study was carried out to examine the effect of age on the performance of White Leghorn strain cross layers (ILM-90) under cage system of rearing.

Materials and Methods

The experimental birds consisted of White Leghorn strain cross layers (ILM-90) and were received from AICRP on Poultry Breeding, Mannuthy Centre. All the birds belonged to a single hatch and were housed at the age of 18 weeks. The experiment consisted of 120 birds on cage system of rearing with floor areas of 700, 560 and 420 cm²/bird with a density of four, five and six birds/cage respectively. Each group consisted of eight replicates. Cages were identical in size of 60 x 45 x 45 cm. The allotment of layers to different treatment groups

as well as different replicates was made at random. Standard management practices were followed routinely in all treatment groups identically. Feed and water were provided *ad libitum* to the experimental birds throughout the study. Commercial layer mash was fed throughout the experiment. The proximate composition of the ration was estimated according to the procedure described in A.O.A.C. (1970).

The study was performed during the period from 21 to 56 weeks of age during June to February and the entire period of experiment was divided into Monsoon and Cold seasons. The South-west monsoon (June-September) and North-east monsoon (September-December) was followed by the cold season (December-February). The data pertaining to hen-housed production, feed consumption, feed efficiency, egg weight and mortality from 21-56 weeks of age were recorded for all the treatment groups and the pooled data for each of these seasons were compared. Ambient temperature (maximum and minimum) and relative humidity (Forenoon and Afternoon) were recorded daily throughout the experimental period.

The data were analysed as per the method of Snedecor and Cochran (1967).

Results and Discussion

The analysed data on egg production, feed consumption, feed efficiency, egg weight and mortality are presented in Table 1.

Table 1 Production performance of White Leghorn strain cross (ILM-90) layers under cage system of rearing from 21 to 56 weeks of age

| Production traits (Mean) | Monsoon | | Cold season (49-56) |
|---------------------------|-----------------------|-----------------------|------------------------|
| | South-west (21-36) | North-east (37-48) | |
| Age in weeks | | | |
| Hen-housed production (%) | 61.74 ^b | 61.66 ^b | 70.88 ^a |
| Feed consumption (g/day) | 131.34 | 126.50 | 129.29 |
| Feed efficiency | 2.75 ^a | 2.50 ^a | 2.20 ^b |
| Egg weight (g) | 50.48 ^b | 55.53 ^a | 55.92 ^a |
| Mortality (%) | 5.8 | 3.2 | 3.3 |

Means bearing the same superscript in the row did not differ significantly ($P < 0.01$).

The mean per cent hen-housed production averaged to 61.74, 61.66 and 70.88 for caged layers in South-west monsoon, North-east monsoon and Cold season respectively and these values were found to be significant statistically ($P < 0.01$) suggesting that the egg production was influenced by the periods studied. The egg production was found to be better in the cold season inspite of advanced age at production. This can be attributed to low minimum temperature coupled with the low relative humidity during this season. The findings in the present study agree with those of Kansal and Gangwar (1983) who indicated the seasonal effects on egg production in White Leghorn layers at different ages.

The mean daily feed consumption was not influenced by the age of the birds whereas the mean feed efficiency was found to be influenced by age. The better feed efficiency was observed in the third phase inspite of the advanced stage of production. This can be attributed to the low minimum temperature coupled with the low relative humidity during the cold season in the year. The values obtained in the present study

for feed efficiency agrees with those of Jalaludeen and Ramakrishnan (1989) who conducted experiments using the same strain cross (ILM-90) layers under cage system of rearing.

The mean egg weight was found to be significant statistically ($P < 0.01$). The significant difference in egg weight was not due to the influence of season but attributed to the age of birds. During South-west Monsoon birds were at pullet age and hence the lower egg weight. The values obtained for egg weights in the present study agrees with those reported by Mathew *et al.* (1979).

The mortality per cent in all seasons were within the standard limits and the livability was not affected adversely in this study. Mortality per cent was higher in South-west monsoon. Observations made in this study agree with that of Reddy *et al.* (1981).

The maximum and minimum temperatures were ranged from 28.2 to 30.8 and 24.7 to 25.3°C respectively. The per cent relative

humidity was 82.9 to 87.0 in the forenoon and 75.6 to 80.3 in the afternoon in the South-west monsoon period. The maximum and minimum temperature was ranged from 30.3 to 31.9°C and 24.4 to 25.2°C respectively with relative humidity per cent of 73.8 to 78.5 in the forenoon and 66.3 to 71.7 per cent in the afternoon during North-east monsoon period. During cold season, the maximum and minimum temperature was ranged from 29.9 to 31.5 and 22.6 to 22.7°C respectively with relative humidity of 65.1 to 67.4 per cent in the forenoon and 44.9 to 54.9 per cent in the afternoon, in the present study.

Summary

An experiment was conducted to study the seasonal variations on production performance of White leghorn strain cross (ILM-90) layers under cage system of rearing. The study was performed during the period from 21 to 56 weeks of age during June to February covering three seasons viz., an extended rainy season split into two monsoon periods, the South-west monsoon (June-September) and North-east monsoon (September-December) followed by the cold season (December-February). The study revealed that the egg production in the later period from 49-56 weeks of age in the cold season was superior over early periods of production in the monsoon season.

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