

Effect of Flock Size on Fayoumi Layer Production

Nasir Rajput, Muhammad Ismail Rind¹ and Rahmatullah Rind

¹Department of Poultry Husbandry, Faculty of Animal Husbandry and Veterinary Sciences,
Sindh Agriculture University Tandojam, 70060, Pakistan

Abstract: Group size in poultry breeding flock as well as female and male ratio greatly contributes to their production, in this concern from an Egyptian Fayoumi laying flock in 27th week of age, 36 layers were weighed (1.60 kg/layer), randomly grouped in A (11), B (12) and C (13) and allocated breeding cock of same age and flock. Layers kept at Poultry Experiment Station, Tandojam, on floor system, each group provided one laying nest, 16 hr fluorescent light and 2 sq.ft space per layer were provided. Birds fed 100 g/layer/day and water was provided 24 h. Eggs were collected at 10, 14 and 18 h daily, soundness was checked and stored in dark room. 50 candled and fit eggs randomly selected and settled into hatchery for incubation. Candling was practiced on 3rd and 14th day and turning was practiced daily. Hatched chicks of each group were collected, weighed and brooded over two weeks. Layers average feed intake (682, 686 and 685 g/b/w) and egg weight (40.36, 40.45 and 40.54 g/egg) were almost increased followed by significant increase in egg production (5.03, 5.19 and 5.21 egg/b/week) with the increase in breeding layer group size for a cock in A, B and groups, respectively. Average fertility and hatchability rates of Fayoumi layer were high for middle (B) than small (A) and large (C) flock size groups during first, second and third hatch of eggs. However, both fertility and hatchability rates were in increasing trend with the progress of age and eggs hatched but hatchability rate was slightly reduced during last hatch and small group reached to its peak of hatching. Overall results of Fayoumi layers kept in middle flock size eggs fertility and hatchability rates were at peak for medium (B) than small (A) and large (C) groups but, chicks from large group to become heavier (29.90) than medium (29.80) and small (29.34) g/b, respectively.

Key words: Fayoumi, flock size, female and male ratio, feed intake, production, fertility, hatchability

INTRODUCTION

Poultry industry greatly contributes to agriculture (9.4% in GDP), which play major role in the filling of protein gap, particularly animal based through rearing exotic breed/strain of layer and broiler. Aseel, Brahma, Gunji and Kark-Nath etc late maturing local poultry breeds are being kept in rural areas. All these are being lay almost less number of eggs (30 to 50 each year), with lower hatchability rate. Fayoumi as an exotic i.e. Egyptian light breed was introduced to rural areas for self employment, boost house economy and partially support to the education, poverty elevation and also minimize the malnutrition problems.

Fayoumi layer produces about 250 eggs per annum on low nutrition supply. It has no broodiness characters and have strong immunity against common diseases, attract the farmers to keep this breed on their homes and farms. Once better egg production has been secured with improved hatchability, the number of qualitative newly hatched chicks may depends upon the male and female ratio of parents, which may plays a main role in this business.

MATERIALS AND METHODS

For the experiment 27 week of age, 36 Fayoumi layers were weighed (average 1.30 kg/ layer), randomly selected from a housed flock and divided into group A (11), B (12) and C (13) and each group was allocated one breeding cock of same age and group and kept at Poultry Experiment Station, Department of Poultry Husbandry, Tandojam. Wooden dust used as litter, one laying box for each group, 2.0 sq. ft. space per layer and 16 hours total light (one ft candle) were provided. House temperature (70 °F) and humidity (55 to 60%) were maintained. Each group of Fayoumi layers was kept in a separate steel iron wired partition cage.

Layers were offered 100 gm/layer/day (iso-nitrogenous and iso-caloric feed). Refusal of feed from each group was collected and weighed at morning. Water was made available over 24 h. Vaccination and debeaking was carried out before conduct of the trial. Eggs were collected at morning (10.0 am), mid day (2.0 pm) and evening (6.0 pm) hours and marked with different colored pencils for identification of the groups. Initial soundness was checked and fit eggs were first weighed

and than stored in dark room at 65 °F along with 70 to 80% humidity for 2 to 6 days. 50 candled and fit fertile eggs from each group randomly selected and settled into hatchery for incubation and latter candling was practiced at 7th and 18th days. Turning of incubated eggs were practiced 4 to 6 time daily from 3rd to 14th day. Later eggs were shifted to hatcher over last 3 days to hatch and dry before collection. Hatched chicks were collected, graded, marked with pink (A), yellow (B) and blue (C) colors, initially weighed and shifted to Poultry Experiment Station Tandojam, for brooding. Chick paper (Horka, 200) was used to cover wooden dust as litter and provided comfort during brooding. Water added sugar was provided for initial 3 h and later simple water was provided. Grind corn for 24 h and then chick starter feed were offered. N.D+I.B. vaccine intra ocular was administrated at 3rd day. The collected data was tabulated and analysis done by using Minitab on GLM^[1].

RESULTS AND DISCUSSION

Average Feed intake: Average feed intake (Table 1) shows that group B (686.3), C (684.9) and A (681.5) g/week was almost same which indicates that Fayoumi group size, had no effect on feed intake. Similar finding has been reported by^[2], that no significant differences ($p>0.05$) in feed intake for various group sizes or male and female ratio were observed.

Egg production: Average egg production (Table 1) indicated that the Fayoumi layers in group C produced Significantly greater ($p<0.01$) number of eggs (5.21) than B (5.19) and A (5.03 average eggs/l/w). The greater egg production in group C which have the association with more number of layers in the group than other groups. Similarly^[3] reported significant effect of group size on egg production.

Egg weight: Average egg weight (Table 1) was slightly more in group C (40.54) than B (40.45) and group A (40.36) g / egg / w, average egg weight produced by Fayoumi layers of same age in various groups, results are in agreement with^[1] who reported that there was no significant difference in egg weight those laid by various groups of layer.

Fertility rate: Fertility rate in first hatch (Table 2) was high in group B (88%) and A (88%) than C (78%), in second hatch it was high in group B (94%) than A (90%) and C (88%) and third hatch, was also high in group B (96%) than A (94%) and C (92%) respectively. Fertility rate indicates that it was significantly improved in all groups with the progress of Fayoumi layers age or hatches. Similar finding has been reported by^[5], that the

fertility and hatchability percentages were significantly lower in restricted fed groups with different male-female ratios.

Hatching rate: Hatching rate in first hatch (Table 3) was higher in group B (72%) then A (68%) and C (58%) in second hatch, it was high in group B (78%) than A (76%) and C (68%) but in third hatch it was high in group A (80%) than B (76%) and C (74%), respectively. Generally hatchability was increased with the progress of hatches and age of Fayoumi layers. While^[6] mentioned that the incident of dead chicks in shell was higher in Fayoumi eggs than other breed.

Overall Production: Overall fertility (Table 4) was high in layers of medium group B (92.8%) than small A (90.7%) and large C (84.7%). This result is well in accordance with the findings of^[7] who reported that group size and then breeding hen and cock ratio, had significant effect on egg fertility and hatchability of Fayoumi breed.

Similarly hatching rate was more in group B (75.3%) than A (74.7%) and C (66.7%). Similar finding have been reported by^[8], who reported that hatchability rate decrease with increasing the number of female to a breeding cock. Average live body weight of chicks was slightly more in group C (29.90) than B (29.80) and A (29.34) g/chicks. The results reported by^[9] which was similar to the present results that

Table 1: Average feed intake, egg production and egg weight of Fayoumi layers.

Particulars	Group			Prob.
	A	B	C	
Layers (##/gr)	11	12	13	-
Feed intake (g/l/w)	681.5	686.3	684.9	0.217
Egg production (##/l/w)	5.03	5.19	5.21	0.001
Egg weight (g/egg/w)	40.36	40.45	40.54	-

Table 2: Average fertility rate of Fayoumi layers (%)

Particular	Group			Prob.
	A	B	C	
Hatch No.				
1 st hatch	88	88	78	*
2 nd hatch	90	94	88	*
3 rd hatch	94	96	92	*

Table 3: Average Hatchability rate of Fayoumi layers (%)

Particular	Group			Prob.
	A	B	C	
Hatch No.				
1 st hatch	68	72	58	*
2 nd hatch	76	78	68	*
3 rd hatch	80	76	74	*

Table 4: Overall production of Fayoumi layers

Particulars	Group			Prob.
	A	B	C	
Fertility (%)	90.7	92.8	84.7	*
Hatchability (%)	74.7	5.3	66.7	*
Chick weight (g/b)	29.34	29.80	29.90	N.S

live body weight of newly hatched Fayoumi chicks was not affected by group size.

REFERENCES

1. M.T.B., 2000. Minitab Microcomputer Software for Statistical Analysis, USA., pp: 215.
2. Hafiz, A.A. and R. J. Balander, 2004. Physiological response of layers to Alternative Feeding Regimen. *Intl. J. Poul. Sci.*, 3: 100-111.
3. Rahaman, M.M., M.R.Hasnath, M.M.Rahman and M.A.R. Howlider, 1997. Performance of commercial parent stock exotic breed and their crosses under rural small holder semi-scavenging system in Bangladesh. *Progressive Agric.*, 8: 133-136.
4. Rahman, M. A., M. M. T. Islam, A. Ali and A. K. Das, 1991. Effect of partial replacement of wheat by rice polish and molasses on the performance of laying pullets. *Bangladesh J. Ani. Sci.*, 20: 113-117.
5. Hasnath, M.R., 2004. Effect of feeding systems on the egg production of fayoumi hens of model breeding units under PLDP programme in Bangladesh. M. Sc. Thesis submitted to Royal Veterinary and Agricultural University, Dyrmlægevej, Copenhagen, Denmark. pp: 1-68.
6. Mahmood, S., M. Sarwar, H. Ahmed and N. Saeed, 1995. Comparative fertility and hatchability of Fayoumi and Lyallpur Silver Black breeds of poultry. *Pak. Vet. J.*, 15: 100-102.
7. Bhatti, B.M and A.W. Sahota, 1996. A comparative study on growth and laying behaviour of Desi, Fayoumi and Rhode Island Red breeds of chicken maintained under local environmental conditions of Rawalpindi Pakistan. *Pak. Vet. J.*, 16: 26-30.
8. Hossary, M.A and E.S.E. Galal, 1995. Improvement and adaptation of the Fayoumi chicken. *Ani. Genetic Res. Inform.*, 14: 33-41.
9. Scoud, A., F.E. Abdel-Salam and A.D. Salim, 1993. The performance of Laying hens as affected by feed restriction and methionin supplementation. *UAR. J. Ani. Prod.*, 10: 267- 277.