

Comparative Productive Performance of Local Hens in Erbil- Kurdistan Region



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Abstract:

This experiment was conducted to study the effect of age at production and different genetic phenotypes of local hens in Erbil. Birds of each genotype were kept in family pens depended on their colours (Line 1 = Black with Brown Neck, Line 2 = Isa Brown, Line 3 = Spotty, Line 4= Pure Black) were randomly distributed on two replicates compared with a commercial strain (Isa brown). Performance characteristics were evaluated. Results showed that age at production and genetic phenotype were affected significantly ($P<0.05$) on some performance traits. Significant differences between groups were found in Egg Production, Egg Mass, Feed Intake and Feed Conversion Ratio traits. Insignificant differences were found between groups in Egg Weight. Age of production affected insignificantly on Feed Intake, while affected significantly ($P<0.05$) on other traits. It is concluded that selection might be possible in local hens to improve their genetic potentials in Iraq-Kurdistan region.

Keywords: Local hens; Egg production; egg weight; egg mass; feed intake; feed conversion ratio

I. Introduction:

Poultry can be found in all developing countries and play a vital role in many poor rural and peri-urban households [1 and 2]. Family poultry production systems are financially economic because even if the productivity of birds is low [3], however, the average production rate of commercial layers usually remains very close to 0.9 eggs per day [3]. Breeding and selection strategies can be exploited to achieve the best possible production in un-favorable tropical environments [4]. High environmental temperatures constrain the chickens' performance in intensive or extensive

production systems. Dissipation of body heat is reduced, feed intake is depressed and optimal reproductive and productive functions cannot be maintained [5]. Natural environments are characterized by seasonal variations in temperature, humidity and daylight length, making birds that perform well in the one environment to show impaired productivity in the others. Specific genotypes for specific tropical locations and production objectives should then be developed [4]. [5] concluded that the genes were not equally responsive to the environments, which offers the opportunity for selective breeding. Interactions between genotypes and the environment for several

traits are an established fact [6]. This study aimed to evaluate performance of some local hen genotypes during different ages of production.

II. Material and Methods:

The present study was conducted at Hawler (Erbil) Research Station–Director of Agricultural Research over the period from December 2010 to the end of April 2011 to study the effect of Age at Production (M= Months) and different genetic phenotypes of local hen's performance. Birds of each genotype were kept in family pens and randomly distributed into two replicates. Each line included (L1 = Black with Brown Neck, L2 = Isa Brown, L3 = Spotty, L4= Pure Black). The hens were fed with basal wheat- corn and soy bean meal ration in which include in average (17%) Crude Protein and Metabolizable Energy of (11.5 MJ/kg). Other nutrients requirements were offered as recommended in the commercial ISA Brown hens' guide. Water was available *ad libitum*. Egg Weight, Daily Egg Mass, Daily Egg Production (%), weekly Feed Intake (g) and Feed Conversion Ratio were recorded and calculated. Egg production was recorded daily per replicate. Mean egg weight were determined daily. Egg mass was calculated by multiplying the mean of daily egg weight to daily egg production. Feed intake and feed conversion ratio were determined at the end of each week.

General linear model (GLM) within SAS Program [7] was used to investigate the effect of genetic line and age of production on studied traits. Duncan Multiple Range Test [8] was conducted to diagnosing the significant differences between the means of the levels of each factor.

III. Results and Discussion:

Egg and meat production is the main objective of local farmers in poultry production. The results of this experiment showed a significant difference ($P<0.05$) within different local genotype groups, as well between local and commercial genotype (Isa brown, L2), in which the higher was found in the last one (Table I).

Consumers prefer larger eggs for consumption or hatching (relatively 55-65 g). Higher Egg Weight was found in the group L1 followed by L4 and the lowest found in group L2 (Isa brown), however differences were insignificant between groups, this result is due to the higher Egg Production in group L2 compared to other groups, this result is accordance with [4 and 9] observation and in accordance with [10].

For economic benefits, farmers calculate the egg mass production of layer flocks, in which the egg weight and the egg production should be considered. Higher value was found in group L2 followed by group L1 and both were differ significantly ($P<0.05$) with other groups. This result could be attributed to the significant higher Egg Production of previous groups, compared to others. [9] found that the Egg Weight in local hen in Jordan averaged as (47.9 g), while in this research averaged (55.58 g).

Feeding of poultry has a great consideration by farmers because of the high contribution of the feed in poultry production cost (60-70%). The optimal age to switch from one phase to the next phase or layer diet depends on Daily Egg Mass production. The higher value of Feed Intake was in group L2 and the best value of Feed Conversion was found also, with previous group, but L1 was comparable in which the

differences were insignificant between the two groups (Table II).

Table.I: Means \pm S.E. for the factors affecting Egg (Weight, Daily Production and Mass)

Effects	Egg Weight (g)	Daily Egg Production %	Daily Egg Mass (g)
Overall Mean	55.58 \pm 0.46	51 \pm 0.02	28.2 \pm 1.04
Lines			
Line 1	57.1 \pm 0.97a	53 \pm 0.03 b	30.3 \pm 2.21 a
Line 2	54.5 \pm 0.73 a	62 \pm 0.02 a	33.6 \pm 1.45 a
Line 3	56.2 \pm 0.72 a	44 \pm 0.02 c	24.8 \pm 1.20 b
Line 4	54.6 \pm 1.06 a	44 \pm 0.03 c	24.1 \pm 1.85 b
Age of Production			
M1	53.3 \pm 1.05 b	55 \pm 0.04 a	29.7 \pm 2.40 a
M2	55.6 \pm 0.9 ab	57 \pm 0.03 a	31.5 \pm 1.51 a
M3	56.4 \pm 1.03 a	51 \pm 0.04 a	28.7 \pm 2.22 a
M4	56.9 \pm 1.01 a	50 \pm 0.04 a	28.6 \pm 2.65 a
M5	55.7 \pm 0.9 ab	40 \pm 0.03 b	22.6 \pm 1.93 b

Means with different superscripts within the column are different significantly (P<0.05). Factors: Lines and Age of production. M1, M2, M3, M4 and M5=first, second, third, fourth and fifth months of egg production.

Table.II: Means \pm S.E. for the factors affecting Feed Intake and Feed Conversion ratio.

Effects	Feed Intake (g)	Feed Conversion Ratio
Overall Mean	104.61 \pm 2.60	3.86 \pm 0.13
Lines		
Line 1	105.45 \pm 5.93 a	3.60 \pm 0.24 b
Line 2	116.22 \pm 3.10 a	3.52 \pm 0.18 b
Line 3	107.79 \pm 2.56 a	4.43 \pm 0.19 a
Line 4	88.97 \pm 4.72 b	3.89 \pm 0.37 b
Age at Production		
M1	96.03 \pm 6.18 a	3.32 \pm 0.24 c
M2	103.62 \pm 6.45 a	3.31 \pm 0.19 c
M3	110.88 \pm 5.27 a	3.99 \pm 0.27 b
M4	103.51 \pm 4.20 a	3.77 \pm 0.25 bc
M5	109.00 \pm 6.60 a	4.91 \pm 0.19 a

Means with different superscripts within the column are different significantly (p<0.05). Factors: Lines and Age of production. M1, M2, M3, M4 and M5=first, second, third, fourth and fifth months of egg production.

[4] was concluded that the genes were not equally responsive to the environments, which offers the opportunity for selective breeding. Significant effects of Age of Productions were found on all traits, except the Feed Intake. Lowest value of Egg

Weight was found at first month of the production (M1) (Table1) compared to other Ages. Significant (P<0.05) lowest value of Daily Egg Production was observed at M5 compared to others. As consequence the Egg Mass was affected and has the same pattern

as Egg Production probably due to the factors influenced the production. Better Feed Conversion Ratio was found during M1 and M2 and differences with M3 and M5 were significant ($P < 0.05$).

Conclusion:

It is concluded that selection might be possible in local hens to improve their genetic potentials in Iraq-Kurdistan region.

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