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Influence of Two High Temperatures and Age on Some Productive and Egg Quality Traits in Laying Hens (Hisex Rrown).

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Abstract

Influence of two different temperatures(21.6 and 25.1°C)and five age groups (23-26, 27-30, 31-34, 35-38 and 39-42 weeks of age) on body weight, feed consumption, egg production, egg weight, yolk weight, albumen weight, shell weight, shell thickness and egg shape index were studied. Results indicate that temperature effects was significant only on egg production ($p<0.05$). Age effect, on the other hand, was significant for body weight, feed consumption, egg production, egg weight and yolk weight. Highest production was obtained at age of 27-34 weeks.

Keywords :-(laying hens, temperature, age, egg quality).

Introduction

The effect of age on egg production and composition at 26, 31, 36 and42 weeks was studied in Pekin ducks [1]. Egg and yolk weight was significantly affected by age and the effect was observed between 26 and 31 week of age.

Environment temperatures of 21, 32 and 38 °C from 3 to 6 weeks of age were also studied in White Leghorn broilers [2]. Traits taking into account were total plasma, protein, body weight gains and body temperature. Some decrease in body weight gain was reported. A significantly higher body weight at 21 °C in comparison with 32 °C was also reported in Isa White broilers [3].In a population of laying hens (F_3) of Rohd Island Red X White Leghorn, a positive genetic correlation was found between body weight and egg weight [4]. They also reported a significant positive correlation between body weight and egg weight.

An inverse relation was also reported between each of body weight and feed:gain ration and environmental temperature when effect of temperature (21.1-31.1 °C) was studied on 21 day old birds [5].

In another study [6] Kesnlt showed a significant age effect upon egg composition. Results reported by [7] also showed an increase in egg weight with hen's age. They also found a significant increase in yolk albumen ration between two age groups (26-31 and 36-42) weeks.

The aim of this study is to evaluate the effect of two environmental temperatures

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Table (1): Average body weight, feed consumption and egg production in laying hens under two high temperatures and five age groups.

Hen age (week)	Body weight (gm)			Feed consumption (gm/hen/day)			Egg production (No./ birds)		
	25.1 °C	21.6 °C	Average	25.1 °C	21.6 °C	Average	25.1 °C	21.6 °C	Average
23-26	1725.50	1741.25	1733.37[a]	105.00	106.75	105.87[a]	20.00 [1]	24.60 [2]	22.03[a]
27-30	1801.50	1849.25	1825.37[b]	111.00	116.75	113.75[ab]	23.36 [1]	24.94 [2]	24.15[bc]
31-34	1899.25	1899.25	1899.25[c]	113.00	117.25	115.12[b]	24.54	24.68	24.61[c]
35-38	1972.00	1952.25	1962.12[d]	121.50	115.00	118.25[b]	23.76 [1]	22.60[2]	23.18[b]
39-42	1960.00	1948.75	1954.37[d]	117.75	118.25	118.00[b]	24.04 [1]	22.74 [2]	23.39[b]
Average	1871.65	1878.15		113.65	114.75		23.14	23.91	

a-d Means in a column with no common superscript differ significantly (P > 0.05).

1-2 Means in rows with no common superscript differ significantly (P > 0.05).

on some productive and quality character is tics of Hisex Brown laying hens in Sulaimani area.

Materials and Methods

The experiment was conducted at the Sulaimani Poultry Company Limited farms during the years 1998-1999. Four hundred, 23-week-old commercial strain Hisex Brown laying hens were used in this study. The birds were randomly distributed into two groups (treatments), two hundred each. Each treatment group was replicated fifty times and each replicate consisted of four individually caged birds.

Hens in each treatment were placed in two different temperatures 21.6°C and 25.1°C.The birds were reared under the standard condition according to [8].

Individual measurements were registered weekly from 23 to 42 week of age of some productive and egg quality characters.

Fresh egg collected and measured within 4 hour of being laid.

The data were analyzed by ANOVA for a completely randomized factorial design. The design allowed for testing the mean effects (treatment and age) and their interaction. Means within each factor were compared using Duncan's multiple tests [9] due to the non significant of the interaction effects.

Results And Discussion

Average body weight, feed consumption and egg production are represented in table (1), whereas averages for egg quality traits are in table (2). Although egg production was significantly ($p<0.05$) higher for the lower temperature groups, other traits were not affected by temperature difference. Such non-significant results disagree with others (2, 3), and could be attributed to the fact that the two temperature used in the present study are within the thermo natural zone.

Egg production significantly decreased with increasing temperature from 21.6 °C to 25.1°C during the period from 23-26 and 27-30 week. In comparison, a significant increase in egg production was noticed during the periods 35-38 and 39-42 weeks . Such result indicates that layers reach peak production at earlier age in 21.6°C comparing with 25.1°C.

Results from table (1) show a significant increase in body weight and feed consumption with increasing age. For body weight, the differences between the first four period groups were significant. Later body weight does not differ from the second period group.

Feed consumption was significantly higher for the three older period groups in comparison with the youngest period. The second period does not differ significantly with the previous or subsequent periods.

Egg production was higher during the periods 31-34 weeks of age ($p<0.05$). Others reported a significant increase in egg production and feed consumption with age [1].

Table(2) indicate the temperature effects was not significant for all studied traits, although egg weight ,yolk weight shell weight and egg shape index were higher at21.6 °C than at 25.1°C.

Egg quality traits increased with age although age effect was significant only for egg weight and yolk weight. Egg weight increased with age although the

Table (2): Average egg weight, yolk weight, albumen weight, shell weight, shell thickness and egg shape index in laying hens under two high temperatures and five age groups.

Hen age (week)	Egg weight (g)			Yolk weight (g)			albumen weight (g)			Shell weight (g)			Shell thickness (mm)			Egg shape index		
	25.1 °C	21.6 °C	Aver	25.1 °C	21.6 °C	Aver.	25.1 °C	21.6 °C	Aver.	25.1 °C	21.6 °C	Aver.	25.1 °C	21.6 °C	Aver.	25.1 °C	21.6 °C	Aver.
23-26	54.48	54.14	a 54.31	13.70	13.48	a 13.59	34.33	34.03	34.18	6.39	6.65	6.52	0.410	0.410	0.410	0.770	0.77	0.770
27-30	57.07	58.56	b 57.81	15.45	16.12	b 15.78	35.14	35.52	35.33	6.49	7.02	6.75	0.390	0.395	0.393	0.760	0.77	0.765
31-34	59.12	60.12	c 59.62	16.20	16.88	c 16.54	35.89	35.81	35.85	7.12	7.40	7.26	0.395	0.395	0.395	0.750	0.75	0.750
35-38	61.56	61.09	cd 61.32	17.15	17.04	c 17.09	37.26	37.39	37.32	7.13	7.33	7.23	0.385	0.390	0.388	0.750	0.76	0.755
39-42	62.40	61.83	d 62.11	17.15	17.02	c 17.08	38.04	37.28	37.66	7.20	7.36	7.28	0.405	0.400	0.402	0.750	0.77	0.760
Aver.	58.65	59.23		15.90	16.15		36.00	36.00		6.87	7.14		0.397	0.398		0.756	0.764	

a-d Means in a column with no common superscript differ significantly ($p > 0.05$) .

differences between third and fourth and between fourth and fifth groups were not significant. Yolk weight increased significantly until 31-34 weeks of age, whereas differences between older groups lacked significance. Others reported significant age effect on egg weight and yolk weight [10].Furthermore, [1] found a non-significant effect of age on some egg quality traits.

In conclusion, highest body weight, feed consumption occurred between 31-42 weeks of age, while the largest increase in egg production occurred between 27-34 weeks of age. Egg weight and yolk weight also showed significant increase as the effect of age. However slight increase in most studied traits occurred as the effect of temperatures.

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کاریگەری دوو پلەی گەرمای جیاواز و تەمەن لەسەر چەند سیفاتێکی بەرهەمهێنەر و چەند سیفاتێکی چۆنێتی هێلکە لە مریشکی هێلکەکەر جۆری (Hisex Brown)

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پوختە

لێکۆڵینەوەیەك ئەنجام درا بۆ زانینی کاریگەری دوو پلەی گەرمای جیاواز (٢١,٦ °م و ٢٥,١ °م) و چوار گروپی تەمەنی (٢٣- ٢٦ ، ٢٧-٣٠ ، ٣١- ٣٤ ، ٣٥-٣٨ و ٣٩-٤٢) هەفتە لەسەر کێشی لەش ، خواردنی ئاڵف ، بەرهەم هێنانی هێلکە ، کێشی هێلکە ، کێشی زەردینە ، کێشی نەلبوومین ، کێشی تۆپکڵی هێلکە ، ئەستوری تۆپکڵی هێلکە و بەڵگەی شێوەی هێلکە .
ئەنجامەکان دەریدەخەن کاریگەری پلەی گەرما کاری دەرکەوتوی هەیە تەنها لەسەر بەرهەمهێنانی هێلکە (p< 0.05) . تەمەن کاری دەرکەوتوی هەبو لەسەر کێشی لەش ، خواردنی ئاڵف ، بەرهەم هێنانی هێلکە ، کێشی هێلکە ، کێشی زەردینە . بەرزترین بەرهەم لە تەمەنی ٢٧-٣٤ هەفتە بەدەست هێنرا.

تأثير درجتان حراريتان مختلفتان و العمر على بعض الصفات الأنتاجية والصفات النوعية للبيض في الدجاج البياض عرق (Hisex Brown)

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الخلاصة

تم دراسة تأثير درجتان حراريتان مختلفتان (٢١,٦ °م و ٢٥,١ °م) و اربعة مجاميع عمرية (٢٣- ٢٦ ، ٢٧-٣٠ ، ٣١-٣٤ ، ٣٥-٣٨ و ٣٩-٤٢) أسبوع من العمر على وزن الجسم ، أستهلاك العلف ، أنتاج البيض ، وزن البيض ، وزن الصفار ، وزن الألبومين ، وزن القشرة ، سمك القشرة و دليل شكل البيضة .

تدل النتائج على أن تأثير درجة الحرارة كانت معنوية فقط على انتاج البيض (p< 0.05) . من جهة أخرى تأثير العمر كانت معنوية لوزن الجسم ، أستهلاك العلف ، انتاج البيض ، وزن البيض و وزن الصفار . الأنتاج الأعلى تم الحصول عليها عند عمر ٢٧ – ٣٤ أسبوع.

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