

The Effects Of Different Hatching Egg Storage Time of Japanese Quails on Live Weight

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Abstract: In this study 90 male and 180 female quail were used. Eggs were collected 10 day daily and stored under 50-60 moisture and 15 °C temperature conditions. Chicks obtained from Eggs collected and stored on each day were taken as a group. Totally 1165 chicks obtained from 10 groups were weighed and placed into rooms(4 x 3.5 x 3 m in dimensions) of wood shavings . Quails were fed starter diet for first 3 weeks and grower diet for later 3 weeks. Quails were weighed weekly .Comparison of groups was made by using ANOVA and In determining the importance of difference among groups, Tukey's honestly significant difference test was used. As a result it can be said that live weight difference of the quails occurring first 35 days of the experiment disappeared at the day 42.

Key Words: quail, egg, growth, preincubation storage

INTRODUCTION

Because of both porous structure and fragility of egg , preincubation period storage conditions of japanese quail egg play an important role. Hatching eggs loose weight at both during preincubation and incubation period. As a result of this, hatchery troubles occur and a productive hatchability can not be realized.

Becker^[1], Bohren *et al.*^[2], Kosin (1964) and Arora and Kosin^[3] reported some adverse effects of extended storage on hatchability and the subsequent performance of the domestic fowl. These adverse effects include reduced hatchability of the stored eggs and increased mortality and decreased body weight^[5] of the chicks hatched from eggs which had been subjected to extended preincubation storage.

Seker *et al.*^[6] reported that the effect of the egg weight had a very significant effect on the chick weight so it was observed that the chick weight increased in parallel of increasing the egg weight. It was reported that environment determined by the hen, namely protein, fat and moisture, had no effect on the growth of the embryo during the first 14 d of development. A 1-g difference in egg weight was reflected in about a 10 g difference in chick weight at 56 d of age.^[7] Bakst and Gupta^[8] stored freshly laid eggs at 150°C for 3, 7, 14d and there were no significant differences in embryo development either within or between groups. Reinhart and Hurnik^[9] reported that length of storage times and storage temperatures did not have a significant effect on chick body weight gains during the first ten days post hatching. Shanawany^[10] reported that hatching weight was highly correlated with egg size at setting. Flock age had no effect on hatching weight from a particular sized egg. It can be pointed out that small eggs used for hatching gave the chicks a

decided disadvantage at hatching time from the standpoint of body weight. This disadvantage was largely overcome by the twelfth week^[11].

This study was conducted to find out the effect of quail egg's preincubation period storage time . on subsequent live weight.

MATERIALS AND METHODS

In this study 90 male and 180 female quail were used. 2 female and 1 male quail together assigned to 90 cage compartments each in dimensions 20x30 cm. Quails were fed diets including 20% CP(crude protein) and 2800 kcal/kg ME(metabolizable energy).

Eggs were collected daily for 10 days and stored under 50-60 per cent relative humidity and 15° C temperature condition until they are incubated. Eggs collected for ten days and stored were incubated thereafter so that, the storage time of eggs were from 0 to 9 days. Chicks obtained from Eggs collected and stored on each day were taken as a group..Totally 1165 chicks obtained from 10 groups were weighed and placed into rooms(4 x 3.5 x 3 m in dimensions) of wood shavings . Quails were fed starter diet for first 3 weeks and grower diet for later 3 weeks. Quails were weighed weekly by using scaltec SBA 61± 0.1 g .Comparison of groups was made by using ANOVA and in determining the importance of difference among groups, Tukey's honestly significant difference test was used. SPSS packet programme was used in execution of statistical analysis.

RESULTS AND DISCUSSION

Live weight means of the quails obtained from eggs with different storage time are given in Table 1. Revising

Table1 Mean Live weight(g) of the quails obtained from eggs with different storage time

Egg Storage time	Live weight(g) on age in days						
	1	7	14	21	28	35	42
0	n109	106	103	101	100	98	96
	x7.49 a	19.57ab	36.14 bc	74.59 a	109.73 ab	139.49 abcd	164.39
	Sx0.07	0.32	0.68	1.02	1.41	1.85	1.68
1	n121	114	111	110	108	105	102
	x7.46 a	17.04 cd	34.68 cd	72.26 abc	105.12 bc	136.58 cd	160.17
	Sx0.07	0.29	0.57	1.01	1.72	1.60	1.72
2	n126	118	114	110	109	109	106
	x7.46 a	17.18 bc	36.34 ab	73.23 abc	104.42 bc	134.65 d	158.37
	Sx0.06	0.32	0.57	0.96	1.76	1.72	1.42
3	n121	103	99	96	93	90	87
	x7.34 ab	16.35 ef	30.01 e	69.12 c	103.43 c	137.27 bcd	160.06
	Sx0.06	0.34	0.63	1.20	1.95	1.89	2.12
4	n119	110	107	105	102	100	98
	x7.54 a	18.71 bc	33.84 d	70.77 bc	104.35 bc	136.01 d	161.02
	Sx0.07	0.34	0.68	1.29	1.61	1.80	1.72
5	n127	108	102	100	99	94	91
	x7.40 a	16.03 f	32.90 d	70.41 bc	102.48 c	142.72 ab	164.52
	Sx0.07	0.31	0.64	1.10	1.45	1.75	2.17
6	n117	103	99	98	98	93	91
	x7.47 a	17.52 d	38.01 ab	71.85 abc	101.74 c	140.03 abcd	164.86
	Sx0.07	0.31	0.65	1.16	2.29	2.39	2.29
7	n114	101	98	97	96	91	89
	x7.48 a	19.71 a	36.87 b	73.48 ab	106.73 abc	145.40 a	164.56
	Sx0.07	0.36	0.57	1.13	1.27	1.83	2.55
8	n102	89	83	83	82	77	76
	x7.32 ab	17.82 cd	39.17 a	73.82 ab	111.25 a	143.99 a	164.38
	Sx0.07	0.37	0.75	1.22	1.57	2.16	2
9	n109	77	74	72	70	65	63
	x7.19 b	17.18 de	37.82 ab	73.61 ab	107.09 abc	142.51 abc	162.82
	Sx0.07	0.41	0.75	1.21	2.29	2.40	2.63
Total	n1165	1029	990	972	957	922	899
	x7.42	17.71	35.44	72.26	105.49	139.55	162.38
	Sx0.02	0.11	0.22	0.36	0.56	0.62	0.64
P	0.017	0.0001	0.0001	0.011	0.002	0.0001	0.137

a,b means in the same column with different superscript are significantly different (p<0.05)

Table 1 it can be seen that live weight difference of the quails occurring first 35 days of the experiment disappeared at the day 42. Result is in contrast to research by Reinhart and Hurnik^[8] who reported that length of storage times and storage temperatures did not have a significant effect on chick body weight gains during the first ten days post hatching. Result corroborate research by Bakst and Gupta^[8], Becker^[1], Bohren *et al.*^[2], Kosin^[3] and Arora and Kosin^[4] reported some adverse effects of extended storage on hatchability and the subsequent performance of the domestic fowl But in the present study, such a result have not been found.

REFERENCES

1. Becker, W.A., 1960. The storage of hatching eggs and the post hatching body weights of chickens. *Poult. Sci.*, 39:588.
2. Bohren, B.B., L.B. Crittenden and R.T. King, 1961. Hatching time and hatchability in the fowl. *Poult. Sci.*, 40: 620
3. Kosin, I.L. 1964. Recent research trends in hatchability related problems of the domestic fowl. *World's Poult. Sci. J.*, 20: 254.
4. Arora, K.L. and I.L. Kosin, 1966. Developmental responses of early turkey and chicken embryos to preincubation holding of eggs: inter –and intra species differences. *Poult. Sci.*, 45: 958-970.
5. Reis, L.H., L.T. Gama and M.C. Soares, 1997. Effects of storage conditions and broiler breeder age on hatchability, hatching time, and chick weights. *Poult. Sci.*, 76: 1459.
6. Seker, I, S. Kul and M. Bayraktar, 2004. Effects of parental age and hatching egg weight of japanese quails on hatchability and chick weight. *Int. J. Poult. Sci.*, 3: 259
7. Al-Murrani, W.K., 1978. Maternal effects on embryonic and postembryonic growth in poultry. *Br. Poult. Sci.*, 19: 277.
8. Bakst, M.R. and S.K. Gupta, 1997. Preincubation storage of turkey eggs: impact on rate of early embryonic development. *Br. Poult. Sci.*, 38: 374.
9. Reinhart, B.S. and J.F. Hurnik, 1976. The effect of temperature and storage time during the pre-incubation period. *Poult. Sci.*, 55: 1632.

10. Shanawany, M.M., 1984. Inter-relationship between egg weight age and embryonic development. *Poult. Sci.*, 25: 449.
11. William, H.W., 1950. The influence of Egg Weight on the pre hatching and post hatching growth rate in the fowl. *Poult. Sci.*, 29:595.