http://www.pjbs.org

PJBS

ISSN 1028-8880

Pakistan Journal of Biological Sciences

ANSInet
Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Pakistan Journal of Biological Sciences 8 (7): 1062-1063, 2005
ISSN 1028-8880

Comparison Between Hatching of Two Quail Strains

N. Vali, M.A. Edriss and H.R. Rahmani
Department of Animal Sciences, College of Agriculture,
Isfahan University of Technology, Isfahan Iran

Abstract: In order to determine characteristics for hatching of two quail strains 1500 eggs of Japanese quail (Cotunix Japanese) and 1200 eggs of Range quail (Coturnix ypsilophorus) were randomly selected from breeder quails (8-16 weeks of ages). The eggs were incubated in artificial incubation in six hatches. Fertility and hatchability of fertile eggs were 74.5±7.9 and 72.46±10.73, respectively. Egg, shell and chicken weights were 10.68±1.01, 0.82±0.08 and 7.54±0.84, respectively. Chicken and shell weights were significantly affected by strain ($p<0.01$), while there was no strain effects for fertility, infertility, egg weights ($p>0.05$). Hatchability (fertile and total eggs), egg weights, chicken weights, shell weights were significantly different in six hatches, while there were no significant differences for fertility and infertility of eggs.

Key words: Cotunix Japanese, coturnix ypsilophorus, quail, hatchability, fertility, artificial incubation

INTRODUCTION

Today in poultry industry artificial incubation is unavoidable and it is true for quails industry. In various parts of the world, farming of Japanese quail is becoming more popular in order to convert feed into valuable human food; this trend seems likely to continue. In most countries egg and meat production from Japanese quail are combined and form single enterprises[1], although quails are producing for specific and varied markets around the world. Due to small body size (80-300 g), rapid growth (slaughter at about 5 weeks) and fast reproductive cycle, Japanese quail farming was extended from large scale integrated firms to small family units[2].

For all kind of raising quail, artificial incubation is necessary and using the technical points is obligatory. This study was conducted to investigate the characteristics of hatching in two quail strains; Coturnix (Coturnix Japanese) and Range (Coturnix ypsilophorus).

MATERIALS AND METHODS

A total of 2700 eggs were obtained from Coturnix and Range quails strains. Eggs were set in an incubator with 1000 eggs capacity at six hatches. This incubator had common Setter and Hatcher and Fan-ventilated. Setter and Hatcher were equipped with separate box which marked according quail strains. The collected eggs from each hatch were antisepticised with formaldehyde in setter at day-one. The setter was operated at 37.5±0.5°C temperatures and 60% humidity for 14 days. Eggs in the setter were turned 12 times per 24 h. The hatcher was operated at 36.5±0.5°C temperatures and 70% humidity for 3 days. Baby quail and eggshells were weighed and infertile eggs were counted. The diet of breeder (8-16 weeks of ages) contained 22% crude protein and 2750 kcal kg^{-1} metabolizable energy. All analyses were performed using General Linear Model procedure[3].

RESULTS AND DISCUSSION

The average of incubation period for both groups was 17.5 days (about 420 h). This periods equivalent to the study that Randall[4] reported the incubation period for quail is 17-18 days, depending on the strain and the incubation procedures.

Woodard *et al.*[5] reported Coturnix eggs average 380 h or 15.8 days (with 37.5°C dry bulb and 32.3°C wet bulb) from setting to piping, 10 hours from piping to hatch and an additional five hours for drying the chicks. Hatching time are varies among strains and inbred line may take as long as 18 days to hatch[5]. Chicken weight at hatch (day-one) for two strains were significantly different ($p<0.01$). There were no significant difference between two strain for egg weight ($p>0.05$), while shell weight was significantly different (Table 1). Mean of egg and shell weights for Coturnix Japanese were close to the previous studies[6-8]. Fertility and hatchability were not affected by strain effects ($p>0.05$). The results obtained for fertility and hatchability in Coturnix Japanese were closed to the

Corresponding Author: N. Vali, Department of Animal Sciences, College of Agriculture,
Isfahan University of Technology, Isfahan, Iran

Table 1: Least squares means and standard error for different traits

Variations source		Fertility of eggs (%)	Hatch of fertile eggs[1] (%)	Hatch of all eggs[2] (%)	Infertility of eggs (%)	Egg weight (g)	Chick weight (g)	Shell weight (g)
Overall means		74.50±7.91	72.46±10.73	54.04±10.51	25.49±7.91	10.68±1.01	7.54±0.84	0.82±0.08
Strains	Coturnix	74.14±3.46^{a}	74.73±2.55^{a}	55.48±1.42^{a}	25.85±3.46^{a}	10.72±0.98^{a}	7.70±0.81^{a}	0.81±0.07^{b}
	Range	74.86±3.46^{a}	70.18±2.55^{a}	52.59±1.42^{a}	25.13±3.46^{a}	10.65±1.04^{a}	7.36±0.83^{b}	0.84±0.08^{a}
Hacthes	1	72.02±6.00^{a}	80.00±4.41^{ab}	57.61±2.46^{bc}	27.97±6.00^{a}	10.44±0.10^{c}	7.37±0.085^{cd}	0.82±0.009^{ab}
	2	73.55±6.00^{a}	66.45±4.41^{bc}	48.88±2.46^{cd}	26.44±6.00^{a}	11.28±0.14^{a}	7.10±0.113^{de}	0.83±0.011^{a}
	3	64.87±6.00^{a}	62.67±4.41^{c}	39.41±2.46^{e}	35.12±6.00^{a}	10.87±0.10^{b}	7.09±0.088^{e}	0.80±0.013^{b}
	4	77.71±6.00^{a}	78.23±4.41^{abc}	60.79±2.46^{ab}	22.28±6.00^{a}	10.47±0.10^{c}	7.91±0.081^{b}	0.82±0.009^{ab}
	5	80.99±6.00^{a}	85.53±4.41^{a}	69.27±2.46^{a}	19.01±6.00^{a}	10.93±0.11^{b}	8.36±0.081^{a}	0.82±0.009^{ab}
	6	77.87±6.00^{a}	61.88±4.41^{c}	48.25±2.46^{de}	22.13±6.00^{a}	10.45±0.10^{c}	7.44±0.064^{c}	0.81±0.008^{ab}

^{a,b,c,d,e}Means within each subclass column with different superscript are significantly different ($p \leq 0.05$), [1]: Hatchability %= (total chicken/fertility eggs) ×100, [2]: Hatchability %=(total chicken/total eggs) ×100

results obtained by Nestor and Bacon[9]. There were some differences among six hatches for the considered traits except for fertility and infertility percent which could be due to environmental effects including age effects.

ACKNOWLEDGMENT

The authors would like to thank the Isfahan University of Technology, Isfahan, Iran for financial support of this research.

REFERENCES

1. Bamgartner, J., 1994. Japanese quail production, breeding and genetics. World's Poull. Sci. J., 50: 227-235.
2. Minvielle, F., 1998. Genetic and breeding of Japanese quail for production around the world. Proceeding 6th Asian Pacific Poull. Congress Nagoya, Japan June 4-7th.
3. SAS Institute, 1998. Statistical Analysis System. SAS Institute Inc. Cary, NC.
4. Randall, M., 2001. Raising Japanese Quail. Agfact A5.0.6, 3rd Edn., pp: 1-8.
5. Woodard, A.E., H. Abplavalp, W.O. Wilson and P. Vohra, 1973. Japanese quail husbandry in the laboratory. University of California, Davis, CA 95616.
6. Charles, F., J.R. Strong, K.E. Nestor and W.L. Bacon, 1978. Inheritance of egg production, egg weight, body weight and certain plasma constituents in Coturnix. Poull. Sci., 57: 1-9.
7. Bacon, W.L., K.E. Nestor and D.W. Long, 1986. Divergent selection for body weight and yolk precursor in Coturnix Japanica. 6. Correlated response in plasma calcium and eggshell traits. Poull. Sci., 65: 355-359.
8. Minvielle, F., J.L. Monvoisin, J. Costa, A. Frenot and Y. Maeda, 1999. Changesin hererosis under within-line selection or reciprocal recurrent selection: An experiment on early egg production in Japanese quail. Anim. Breed. Gene., 116: 363-377.
9. Nestor, K.E. and W.L. Bacon, 1982. Divergent selection for body weight and yolk precursor in Coturnix coturnix Japanese. 3. Correlated responses in mortality, reproduction traits and adult body weight. Poull. Sci., 61: 2137-2142.