

# The Effect of Egg Laying Period on Artificial Incubation of Pheasants (*P.colchicus*)

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In this study eggs were obtained from the pheasants between March and September for each year of 2002 and 2003. Eggs collected from captive pheasants (*P. colchicus*) in 2002 ( $n=75$ ) and 2003 ( $n=102$ ) were artificially incubated with careful monitoring to identify factors contributing to the low hatch success. The egg laying period of pheasant significantly affected the hatchability of fertile eggs, chick weight at hatching, hatchability of total eggs, fertility and deformed chicks ( $P<0.01$ ). Hatchability, which was 74.5% in the 1<sup>st</sup> egg laying period increased with year and reached to 81.2 % in the 2<sup>nd</sup> egg laying period. Hatchability of fertile eggs, chick weight at hatching, hatchability of total eggs and fertility were higher at the second egg laying period compared with the first period. The weight loss of eggs and length of incubation were unaffected from egg laying period.

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**Keywords:** pheasants; egg laying period; artificial incubation; hatchability

## Introduction

There was a rise in egg production from the start of lay reaching an early peak followed by a steady decline, similar to that reported by Mashaly *et al.* (1983) and Bagliacca *et al.* (1990).

For the pheasants different reports also exist with respect to fertility ratio. This ratio was reported as 78.4 – 89.3% by Blake *et al.* (1987), as 78 – 94.5 % by Slaugh *et al.* (1988), as 88.7 – 92.2 % by Deeming and Woodland (2002), and as 81.63 % by Cetin *et al.* (1997). Hatchability of fertile eggs was reported as 71.1 – 76.9 %, 45 – 57 % and 72.7 – 75.8 % by Gibes *et al.* (1978), Praff *et al.* (1990) and Deeming and Woodland (2002), respectively. This research was designed with the aim of comparing the incubation results of eggs obtained from the pheasants, as well as contributing to the feasibility of pheasant breeding at sectoral level.

## Materials and Methods

In this study eggs were obtained from the pheasants between March and September for each year of 2002 and 2003. Eggs collected from captive pheasants (*P. colchicus*) in 2002 ( $n=75$ ) and 2003 ( $n=102$ ) were artificially incubated with careful monitoring to identify factors contributing to the low hatch success.

The birds were kept together in the 35 week age, and then they were allowed to choose their mates. They were separated into 8 females, 1 male in 2002, with the aim of obtaining fertile eggs. These pheasants were placed into pens with 5x5 m<sup>2</sup> dimensions. The first egg was obtained from pheasants at 40th wks of age. The pheasants received starter diet (26.2 %CP and ME 13.0 MJ/kg of diet) between 1-28<sup>th</sup> days. A grower diet (20.0 %CP and ME 13.0 MJ/kg of diet) was fed between 29-85<sup>th</sup> days. The finisher diet (14.0 %CP and ME 11.6 MJ/kg of diet) was given afterwards (Wiseman, 1987). Drinking water was available at all times in the enclosures.

The pheasant eggs in the pens were collected twice daily, being in the morning and in the evening then recorded. Eggs obtained from pheasants were stored in the egg store with 70 % RH and 15 - 17 °C temperature for 5 days. Eggs without shell abnormalities and malformations were used in the trial. Eggs were weighed with an electronic scale balanced at 0,01 g precision before being placed into incubator. Eggs were incubated at 36.5 °C and 90 % relative humidity for 21 days during which day were rotated hourly at an angle of 45°. Thereafter; these eggs were transferred into hatching machine during the last three days. A temperature of 36.0°C and relative humidity of 95 % were provided to the eggs at hatching period. Fertility ratio, hatchability of fertile eggs and hatchability of total eggs were determined. Values related to the characteristics investigated were subjected to analysis of variance, and Duncan's multiple range tests was applied in the comparison of means (Minitab, 1989).

## Results and Discussion

The incubation results in pheasant as related to egg laying periods are given in Table 1. The egg laying period of pheasant significantly affected the hatchability of fertile eggs, hatchability of total eggs and fertility ( $P<0.01$ ). Hatchability of fertile eggs, hatchability of total eggs and fertility were higher at the second egg laying period compared with the first period.

**Table 1.** Incubation results in pheasant as related to different egg laying period (mean  $\pm$  SEM)

	2002	2003	
	1 <sup>st</sup> Breeding Season	2 <sup>nd</sup> Breeding Season	
Eggs weight (g)	28.4 <sup>b</sup> $\pm$ 1.9	32.1 <sup>a</sup> $\pm$ 2.5	**
Fertility (%)	78.6 <sup>b</sup> $\pm$ 2.3	83.3 <sup>a</sup> $\pm$ 4.2	**
Hatchability of fertile eggs (%)	74.5 <sup>b</sup> $\pm$ 2.4	81.2 <sup>a</sup> $\pm$ 3.2	**
Hatchability of total eggs (%)	58.6 <sup>b</sup> $\pm$ 1.8	67.6 <sup>a</sup> $\pm$ 2.4	**
Weight loss of eggs	12.4 $\pm$ 0.9	12.1 $\pm$ 0.7	NS
Mean length of incubation	581.2 $\pm$ 15.3	586.3 $\pm$ 11.4	NS

a,b; Values within lines with no common letter differ significantly

\*\*  $P<0.01$

Egg weight was found higher in pheasants second laying period. Egg weight of pheasants was reported as 31.9 – 34.4 g by Blake *et al.* (1987) and 33.3 g by Cetin *et al.* (1997) for pheasant. These values are generally higher than those determined in our research. Tserweni-Gousi and Yannakopoulos (1990) reported that egg weight of pheasants increased with age and the mean egg weight was 33.9 g. Age at first egg for pheasants was reported as 30 – 38 weeks by Mashaly *et al.* (1983). The weight loss of eggs and length of incubation were unaffected from egg laying period.

In general the fertility ratio obtained in our study was similar to the results of some other researches (Blake *et al.* 1987; Slauch *et al.*, 1988; Woodard and Snyder, 1978; Torgowski *et al.*, 1988; Deeming and Woodland, 2002), Hatchability, which was 74.5% in the 1<sup>st</sup> egg laying period increased with year and reached to 81.2 % in the 2<sup>nd</sup> egg laying period. In general, the hatchability of fertile eggs and hatchability of total eggs were found similar values obtained by numerous researchers (Gibes *et al.*, 1978; Cetin *et al.*, 1997; Deeming and Woodland, 2002).

As a result, artificial incubation of pheasants was affected from egg laying period. There for the best results in pheasant incubation depends on breeder flock age and also optimum incubation conditions, suitable management. The results were expected to assist pheasant breeders, while also contributing to the scientific literature.

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