

# THE EFFECT OF CHICK SEPARATION ON PRODUCTIVITY OF THE HEN AND CHICK

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## Summary

A CRD experiment with unequal numbers of hens were assigned at random to three treatment groups, 1) separation of chicks from hen at 21 days after hatching 2) separation of chicks from hen at 7 days and 3) hens were allowed to brood the chicks (no separation) up to 30 weeks of age, to determine the productive and reproductive performance of hens and their chicks. The mean cycle length (one hatch to another) was 72.8 days for the 7-day group as compared with 87.7 days and 83.4 days for the 21-day and the no separation groups, respectively ( $p < .01$ ). The broody period was 28.5 days for the 7-day group compared with 43.9 and 42.6 days for the 21 days and the no separation groups, respectively ( $p < .01$ ). The end of the broody period to the start of lay varied from 8.0 to 8.7 days. The number of eggs laid per clutch were 12.3 for the 21-day group, compared with 11.5 and 10.1 for the 7-day and no separation groups, respectively ( $p < .05$ ). This is due to the longer ( $p < .05$ ) clutch length of the 21 day group as compared with the 7-day and no separation groups, respectively. The chicks separated from the hens at 21 and 7 days were heavier ( $p < .01$ ) than the chicks not separated from the hens. Mortalities were highest ( $p < .05$ ) for chicks separated at 7 days as compared with chicks separated at 21 days and those not separated. We concluded that separating chicks at 7 days from the hen gave the shortest cycle length and broody period, separating the chicks at 21 days gave the longest clutch length and the maximum number of eggs, separating the chicks at 21 and 7 days resulted in heavier chicks and separating the chicks at 7 days resulted in the highest mortality.

(Key Words: Broody, Chicks Separation, Hen Productivity)

## Introduction

Rearing indigenous chicken is a very common phenomenon in rural Bangladesh. About 98 percent of farm households keep a few birds as a means of securing additional cash income as well as to meet emergency needs. Most of the eggs in the country are supplied from backyard indigenous scavenging chicken. Commercial poultry farming is yet to be developed (Huque, 1985). Indigenous chickens are poor producers and lay about 35 to 45 eggs per year (Bulbul, 1983; Ahmed and Islam, 1985). Female birds spend a large percentage of their time in incubating eggs and rearing chicks after natural hatching which is one of the reasons for low productivity. The present study was undertaken to determine the effect of separating the chicks from the hen and

the growth of chicks from day old to 10 weeks of age.

## Materials and Methods

One hundred and fifty indigenous (*desi*) hens were selected at random from Kalma village under Savar Upazila of Dhaka District and assigned to the following treatments. In treatment 1 (21 days), chicks were separated from the hen during the day in a bamboo coop (*Pollow*) from 3 to 10 weeks of age and supplied a chick starter ad libitum. In treatment 2 (7 days), chicks were separated from the hen during the day from 7 days to 10 weeks of age in a *pollow*. The chicks were supplied with a chick starter ad libitum while the hens were supplied with 50% of the required layer ration. In treatment 3 (no separation), the chicks and hens were allowed to scavenge just like the usual practice in the village.

The following data were collected during the experimental period: 1) cycle length from one hatch to the next hatch, 2) broody period; after hatching, the chicks were reared by their mother

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hen until they can look after themselves. The indication of brooding is measured from the day of hatch to the day when the mother hen does not allow chick to go with her, 3) period from end of brooding to start of lay, 4) number of eggs laid per clutch, 5) clutch length, 6) weight of chicks and 7) chick mortality. Data were analyzed as a CRD with test of significance according to Kramer (1956). Percentages were transformed to angular values before analysis (Snedecor and Cochran, 1982).

### Results and Discussion

The mean cycle length, broody period, end of brooding to start of lay, number of eggs laid and clutch length in treatments 1 (21 days), 2(7 days) and 3(no separation) are presented in table 1. The mean cycle lengths were 87.7, 72.8 and 83.4 days in the 21 day, 7-day and no separation groups, respectively. The cycle lengths of hens in the 21-day and no separation groups were longer ( $p < .01$ ) than the 7 day group. From the

TABLE 1. MEAN  $\pm$  SEM OF CYCLE LENGTHS, BROODY PERIOD, END OF BROODING TO START OF LAY, NUMBER OF EGGS LAID AND CLUTCH LENGTH

Parameters	T <sub>1</sub> (21 days)	T <sub>2</sub> (7 days)	T <sub>3</sub> (no sep.)
(n)	(30)	(35)	(14)
Cycle length (days)	87.7 $\pm$ 2.2 <sup>a</sup>	72.8 $\pm$ 2.0 <sup>b</sup>	83.4 $\pm$ 2.8 <sup>a</sup>
Broody period (days)	43.9 $\pm$ 1.4 <sup>a</sup>	28.5 $\pm$ 0.9 <sup>b</sup>	42.6 $\pm$ 2.9 <sup>a</sup>
End brood-start lay (days)	8.0 $\pm$ 1.1 <sup>a</sup>	8.7 $\pm$ 1.2 <sup>a</sup>	8.5 $\pm$ 1.2 <sup>a</sup>
Number of eggs per clutch	12.3 $\pm$ 0.7 <sup>c</sup>	11.5 $\pm$ 0.4 <sup>d</sup>	10.1 $\pm$ 1.9 <sup>d</sup>
Clutch length (days)	14.9 $\pm$ 1.0 <sup>c</sup>	13.3 $\pm$ 0.5 <sup>d</sup>	11.9 $\pm$ 1.0 <sup>d</sup>

<sup>a,b</sup> Any two means having non identical superscripts are different ( $p < .01$ )  
<sup>c,d</sup> ( $p < 0.05$ )

differences among these three treatments it was observed that the separation of chicks from the hen at 7 days gave the shortest cycle length compared with those separated at 21 days and the no separation group. The broody period of the hens in the 21-day, 7-day and no separation groups were 43.9, 28.5 and 42.6 days, respectively. The broody period of the 21-day group and no separation groups were longer ( $p < .01$ ) than the 7-day group. The period from the end of broody period to beginning of lay was 8.0, 8.7 and 8.5 days for the 21-day, 7-day and no separation groups, respectively. The number of eggs laid per clutch were 12.3, 11.5 and 10.1 for the 21-day, 7-day and no separation groups, respectively. The number of eggs laid by the 21-day group was more ( $p < .05$ ) than the 7-day and no separation groups. The clutch lengths were 14.9, 13.3 and 11.9 days for the 21-day, 7-day and no separation groups, respectively. The clutch length of the hens in the 21-day group was longer ( $p < .05$ ) than the 7-day and no separation group. From the differences among the treatments, it was found that the number of eggs laid increased with the increase in

clutch length.

The mean body weight and mortality rate of chicks up to 10 weeks of age in the three treatments are shown in table 2. The body weights of the chicks at 10 weeks of age in the 21-day, 7-day and no separation groups were 319.1, 323.5 and 241.5 grams, respectively, with the first two groups being heavier ( $p < .01$ ) than the no separation group. Percentage chick mortalities were 19.7, 40.7 and 29.6 percent for 21-day, 7-day and no separation groups, respectively, with the 7-day group showing the highest ( $p < .05$ ) compared with the 21-day and no separation groups. It might be mentioned here that mortalities of chicks in the 21-day group were recorded from three to ten weeks of age while in the 7-day group from 7 days to 10 weeks and in the no separation group from day-old to 10 weeks.

One will note the best results, for cycle lengths and broody period were from hens separated at 7 days while for clutch length and eggs produced, the best results were from hens separated at 21 days. A further experiment whereby separation at 14 days might possibly result in the favourable

HEN AND CHICK PRODUCTIVITY AFTER CHICK SEPARATION

TABLE 2. MEAN  $\pm$  SEM(n) BODY WEIGHTS AND % MORTALITIES OF CHICKS UPTO 10 WEEKS OF AGE

Parameters	T <sub>1</sub> (21 days)	T <sub>2</sub> (7 days)	T <sub>3</sub> (no sep.)
Body weight <sup>1</sup> (g)	319.1 $\pm$ 12.9(27) <sup>a</sup>	323.5 $\pm$ 15.5(28) <sup>a</sup>	241.5 $\pm$ 20.9(13) <sup>b</sup>
Mortality <sup>1,2</sup> (%)	19.7 $\pm$ 04.7(30) <sup>d</sup>	40.7 $\pm$ 05.3(35) <sup>c</sup>	29.6 $\pm$ 07.0(14) <sup>d</sup>

<sup>1</sup>Each sample consist of a group of chicks of one hen.

<sup>2</sup>Mortality recorded from 21 days, 7 days and from day-old to 10 weeks of age respectively

<sup>a,b</sup>Any two means having non identical superscripts are different (p < .01)

<sup>c,d</sup>(p < .05)

effects obtained at 21- and 7-day separation is planned. The 21-day separation group resulted in a longer clutch length and more eggs than the no separation group. Thus, it indicates an advantage in a longer cycle resulting from separation at 21 days. However, if we extrapolate cycle length to one year, the number of eggs laid per year will be 51.2, 57.7 and 44.2 for the 21-day, 7-day and no separation groups, respectively.

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