

## **GROWTH PERFORMANCE AND UNIFORMITY OF COMMERCIAL BROWN LAYER CHICKS**

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### **Abstract**

Growth performance of commercial brown layer chicks (Shaver 579; n = 408) was studied in an open-sided house by feeding layer starter and layer grower diets during 0-17 weeks of age. The experimental period was divided into three phases: Phase I (0-4 weeks), Phase II (5-7 weeks) and Phase III (8-17 weeks). Both growth and feed consumption closely followed the standard data except during 10, 11, 12 weeks of age when the birds had to face some stresses. The target body weight was 1.4 kg which was achieved at proper age (17 weeks) by consuming feed almost similar to standard amount. Compensatory growth of chicks occurred during the later stage of growing period. The flock uniformity was 80% at 17 weeks. Livability of chicks was found to be excellent (99.3%) during the experimental period (0-17 weeks). It is suggested that despite some stresses, commercial brown layer chicks may achieve body weight and uniformity close to breeder's standards when reared in an open-sided house.

**Key words:** Growth, Uniformity, Commercial brown layer

### **Introduction**

The brown layer Shaver 579 is one of the most commonly available strains of chicken in Bangladesh. They are believed to be well adaptable under climatic condition of Bangladesh. Khatun (2000) found an excellent livability (100%) of Shaver 579 in an open-sided house. Rouf (2001) found good productive performance such as body weight, egg production, feed conversion, livability of Shaver 579 under Bangladesh condition. Begum (2006) also found good performance in terms of body weight (1459.9 g), uniformity (74.8%), and livability (99.66%) of Shaver 579 at 18 weeks of age when reared on floor in an open-sided house under Bangladesh condition. Management of the commercial laying chicken starts at day-old. Commercial layer is usually reared on littered floor during the brooding and growing period and subsequently in cages during the laying period. Al-Rawi and Abou-Ashour (1983) found higher mortality of grower/layer birds reared in comparison with those reared on littered floor.

The performance parameters such as growth, uniformity and livability are affected by a number of factors during the growing period when the chicks are reared on littered floor in

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an open-sided house. Previously, a research was conducted to keep the body weight and uniformity within the standard ranges and to make the subsequent production performance excellent under hot-humid condition. But weekly growth curve was not compared with standard body weight and flock uniformity was not reported for growing period. In this study, an attempt was made to address this information gap by monitoring the growth performance, uniformity and livability of the commercial brown layer strain (Shaver 579) in an open-sided house.

## Materials and Methods

### Birds and housing

Four hundred eight commercial brown layer chicks (Shaver, 579) were considered for comparison with the standard performance recommended by the breeder of the strain (Shaver 579 Layer Management Guide, 2005). The duration for the experiment was 17 weeks. During brooding period (0-4 weeks), an experimental room was used providing 0.5 sq.ft. to each bird. During 5 to 7 weeks, floor space for each bird was provided 0.7 sq.ft. After seven weeks to the point of transfer to the laying cage, four pens were used for rearing of chicks by providing 2.4 sq.ft. floor space to each bird.

### Feeds and feeding

Chick starter and grower diet were procured from Aftab Bahumukhi Farms, Bazitpur, Kishorganj. All starter feed was in crumble form and supplied *ad libitum* to the birds for the first seven weeks. After seven weeks, birds were divided into three groups and fed grower diets of the same source according to size i.e. small, medium, and large. The composition of diets is shown in Table 1.

**Table 1. Chemical composition of layer starter and grower diets\***

Nutrients	Starter diet (0-6 weeks)	Grower diet (7-17 weeks)
ME (kcal/kg)	2900	2800
CP (%)	19.00	15.75
Ca (%)	1.25	0.97
Av. P (%)	0.46	0.43

\*Source: Aftab Feed, Aftab Bahumukhi Farms, Bazitpur, Kishorganj

### Routine management

The chicks were provided with a temperature of 35°C for first 3 days and 34°C for next four days of the first week. The temperature was then gradually decreased at the rate of 2.5 °C per week up to 4 weeks of age. Most of the management practices were similar to SHAVER 579 Layer Management Guide (2005). To combat adverse condition, like beak trimming, high ambient temperature etc. birds were supplemented with multivitamins (Megavit WS @ 1

g/10L, NOVARTIS Limited, Tongi, Dhaka, Bangladesh), Vitamin K (Rena – K, Renata Limited, Dhaka, Bangladesh) at a rate of 1 g/10L and Dexolyte Electrolyte @ 5 g/4L drinking water (NAVANA Pharmaceutical LTD., Rupgonj, Narayangonj, Bangladesh).

### **Recording of data**

The layer chicks were initially weighed as a group and then weighed individually until the termination of the experiment (17<sup>th</sup> week). The temperature and relative humidity were recorded four times a day by using an automatic thermo-hygrometer. Uniformity was calculated as:

$$\text{Uniformity (\%)} = \frac{\text{Number of birds within } \pm 10\% \text{ of the target body weight}}{\text{Total number of birds weighed}} \times 100$$

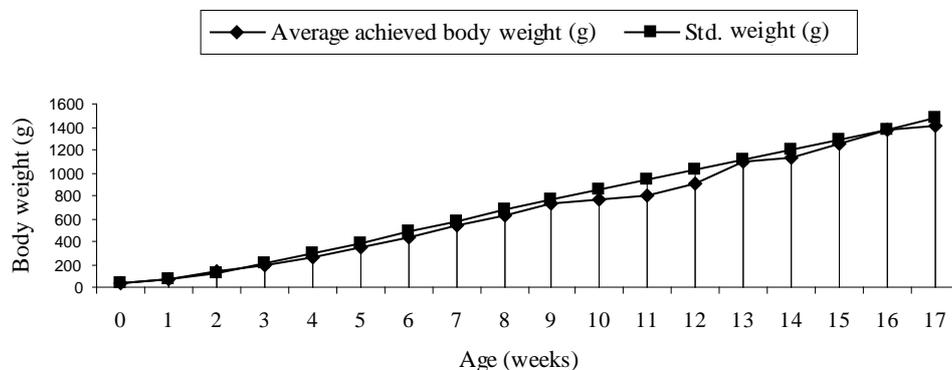
### **Statistical analysis**

All recorded and calculated data on growth performance were statistically analyzed using Normal test (Z -test) following Mead and Curnow (1983)

## **Results and Discussion**

### **Phase I (0-4 weeks)**

The achieved body weight of Shaver 579 commercial layer chicks were significantly higher ( $P < 0.01$ ) than the standard at 1<sup>st</sup> and 2<sup>nd</sup> week. At 3<sup>rd</sup> week, no significant difference ( $P > 0.05$ ) was observed between the achieved body weight and standard body weight. There were significant difference ( $P < 0.01$ ) between the standard and achieved body weight at the end of 4<sup>th</sup> week. Although significant differences were observed between achieved body weight & standards at 1<sup>st</sup>, 2<sup>nd</sup> & 4<sup>th</sup> week, the data were acceptable since all values of body weight were within the acceptable ranges of  $\pm 10\%$  of the standards (Fig. 1). During this period, the pattern of feed consumption followed closely to that of standard curve (Fig. 2). Livability was excellent during this period (100%).



**Fig. 1. Growth curve of Shaver 579 (Standard vs. Achieved body weight)**

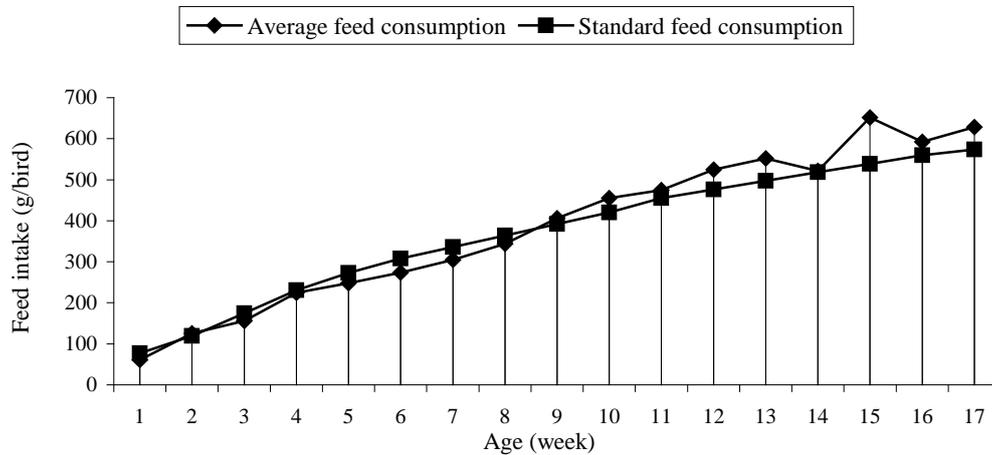


Fig. 2. Feed consumption of Shaver 579 (Standard vs. Achieved)

### Phase II (5 weeks to 7 weeks of age)

It was observed that there were significant differences ( $P < 0.01$ ) between the standard and achieved body weight at 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> week. The bird weighed significantly lower than their respective standards. Although statistically significant difference was observed, like phase I the achieved body weights were acceptable as they were close to the acceptable ranges of  $\pm 10\%$  of standards. During this period, feed consumption curve followed a trend more or less similar to standard curve (Fig. 2). Livability was also excellent during this period (99.51%).

### Phase III (8 weeks to 17 weeks of age)

It was observed that there were significant differences ( $P < 0.01$ ) between the standard and achieved body weight at the end of each week of phase III. The birds weighed significantly lower than their respective standards. Although statistically significant difference was observed between achieved body weight and standard body weight, results of phase III followed a trend similar to earlier phase I and phase II since data were within the acceptable ranges of  $\pm 10\%$  of standards except at 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> week. The reasons for such an unusual deviation from the  $\pm 10\%$  of the standards during 10-12 weeks, were probably due to effect of cold, at the later part of 10<sup>th</sup> week and stress from vaccination with Fowl Cholera vaccine as applied at the end of 9<sup>th</sup> week of age. Of course, livability was excellent during this period (99.26%), similar to earlier phases.

### Flock uniformity

The graphical presentation of uniformity data for growing chicks is shown Fig. 3. From the figure, it is observed that uniformity during weeks 8 to 17 was either close to or higher than minimum standards (80 %) (Shaver 579, Layer Management Guide, 2005) with an exception in the 11<sup>th</sup> week. The uniformity at 11<sup>th</sup> week was below the standard. This was probably due to disease occurred at later part of 10<sup>th</sup> week as already indicated. According to SHAVER 579 Management Guide, the uniformity during growing period should be 80 % or above.

According to Hendrix Poultry Breeders (2004), the uniformity of body weight ( $\pm 10\%$ ) should be at least 70% at 10 weeks of age and at least 75% from 15 weeks onwards for Hisex Brown, Bovans Nera, Bovans Goldline, Dekalb Brown. According to Commercial Management Guide, 2006-2008 of Hyline Variety (Brown) as given by Hy-line International, realistic goal for uniformity is 80% or above. Begum *et al.* (2006) reported that the uniformity of birds from 12 to 18 weeks of was within the acceptable levels (75 % or above) except at 17<sup>th</sup> week (69%).

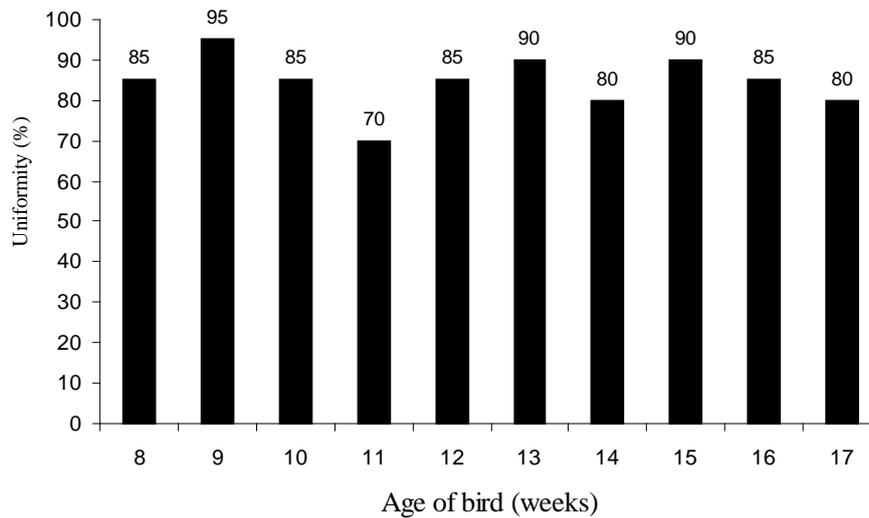


Fig. 3. Uniformity of Shaver 579 growing chicks

The results indicated that uniformity of birds was quite good in open-sided house except during unusual conditions when the growth was affected either positively or negatively.

Table 1. Overall comparative performance of Shaver 579 (0-17 weeks)

Variables	Achieved	Standard	$\pm 10\%$ value of standard (Range)
Initial Body wt. (g/bird)	36.6	37.0	33.3-40.7
Final Body wt. (g/bird)	1402	1470	1323-1617
Feed consumption (g/bird)	6543	6314	5683-6945
Uniformity (%) (8-17 weeks)	84	80 or above	--
Livability (%)	99.3	97	--

From Table 1, it is evident that the initial and achieved body weights as well as other performance traits were more or less similar to standards. Consumption of feed during the experimental period was almost similar to the standard. The chicks reached to final body

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weight close to standard. Uniformity was found to be satisfactory. Livability was found to be excellent in comparison with the standard.

### **Conclusion**

It may be concluded that growth performance and uniformity of Shaver 579 commercial growing chicks is achievable close to standards in open-sided house.

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