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Effect of body weight at maturity on the productive and reproductive performance of broiler parent stock

Md. Ahsan Habib Pramanik[1]*, S. D. Chowdhury[2]

[1]Department of Livestock Services, Dhaka, Bangladesh
[2]Department of Poultry science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh

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***Corresponding Author**

MAH Pramanik
✉ mahmizan@gmail.com

ABSTRACT

The experiment was aimed to determine the effect of body weight at maturity on the productive and reproductive performance of broiler parent stock and to suggest correct grading of uniformity. Broiler parent stock were selected and divided according to the body weight and arranged as overweight, standard weight and underweight groups, which were considered as treatments. The experiment was conducted for 20 weeks (22 to 42 weeks of age). There were three treatments and each treatment has three replications. Each replication contained 12 hens and 2 males. The birds were managed in an open sided house. Similar management facilities and environmental conditions including feeding, watering ventilation, disease control, lighting, laying facilities etc were provided. The feeds were procured from a Feed Mill (Aftab Feed Mill Ltd., Bhagalpur, Bajitpur, Kishoregonj). Strict biosecurity measures were taken to reduce infections. The eggs laid by the experimental birds were counted, weighed and selected for observing other abnormalities. There was a slight variation in egg production, egg weight, and other abnormalities for eggs between the strains. The results in both strains were more or less similar. The production performance of standard weight group birds was satisfactory and considered as better layers than other body weight treatment groups. The egg weight did not vary widely in the body weight treatment groups. The birds within the recommended body weight and the body weight within ±10% of the standard birds considered as standard group. The soft-shelled egg and egg breakage were minimum in standard weight groups Such body weight group should be maintaining under Bangladesh conditions to obtain good potentiality from broiler parents.

INTRODUCTION

Bangladesh provides a very fertile virgin field for the development of poultry industries. During the last decade, the poultry sector of Bangladesh has developed significantly. Poultry birds are no more only a back yard farming now; it is shaping up as a industry. The economical impact of poultry farming is encouraging new investment in this sector. But still our poultry industries are facing some constrains, which are hampering its higher possibilities of prosperity.

Many commercial broiler farms have been established in Bangladesh and numbers of farmers are further increasing. With the increasing set up of commercial broiler farms, the demand of day-old broiler chicks is increasing proportionately. To fulfill the growing demand, a huge number of day-old chicks should be produced. But only a few numbers of hatcheries are maintaining the parent stock and grandparent stock farm has not been established in this country. There is a need to find out the procedure and best technologies, how hatcheries can produce a large number of chicks from the limited facilities. The farm owner, who are establishing the parent stock farm, have only the vast amount of money, but required technical 'know how' are not available, which has become a matter of research.

Body weight is an important factor for egg production, egg weight. Because the birds of heavier body weights produces fewer eggs (Robinson and Wilson, 1996; Barbour et al. 1996; Spralt and Leeson, 1987; Pearson and Herron, 1982; Srivastava et al. 1993). Kwakkel et al. (1991) stated body weight as the determinant of

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laying performance. Broody et al. (1980) also reported that a minimum body weight and age might be required for the onset of lay. Berti et al. (1996) showed body weight at 18 weeks had no significant effect on the age at sexual maturity or at 50% egg production. Renden (1987) and Okpokho et al. (1990) reported that higher body weight hen produced significantly more total and settable eggs.

So, relationship between the weight of broiler breeder and level of production has received considerable and well deserved attention. Today it is generally acknowledged that if breeders gain too much weight or too quickly, they control their reproductive processes (Robinson, 1996).

Body weight also affects the egg weight. Generally, the larger birds lay eggs which are bigger in size than the smaller one. At the onset of laying, the eggs become smaller and then increase in size with the increasing age. Nys et al. (1990) concluded that, in case of dwarf broiler fowls, egg weight was highest for the heaviest fowls and similar comment was expressed by Triyuwanta et al. (1992); Summer and Leeson (1983); Leeson and Summer (1987); Wilson and Herms (1986) and Robey e al. (1988). The comment was also supported by Bish et al. (1985) and they reported that higher produced smaller eggs (Summer and Leeson, 1983).

It was also out lined that, egg size was increased with the age of the birds (Luyks, 1994; Gous et al. 2000; Robbin et al., 1988). Hurwitz and plavnik (1989) and Okpokho et al., 1987) have given importance on the age at maturity, which may influence the egg weight.

The recent development indicates that the number of parent stock farms and parent birds are increasing day by day. Though the number of farms and birds are in increasing competitively, the management technologies and other necessary information are not available to the farmers which may affect the performance of broiler parent. The performance data particularly the effects of parent body weight on productive performance under Bangladesh conditions are lacking. The commercial producer who are maintaining broiler parent stocks, develop their management techniques mostly on the basis of past experience and limited farmers collect data permanently. The farmers, who are generating data, keep them strictly confidential.

Many farmers claim that the birds that achieved overweight and underweight are not good producers and only the standard weight birds may give satisfactory production. So, special attention should be paid on the body weight during growing phase. Actually, no research has been carried out still now, how body weight affects the productive performance under Bangladesh context. That is why, the experiment was under taken to investigate the influence of underweight and overweight at maturity on production characteristics of parent stock. The study will suggest correct grading of uniformity on the basis of result.

MATERIALS AND METHODS

Birds

The experiment was carried out at Bangladesh Agricultural University poultry farm with broiler parent stock of two different strains and marked as the strain-1 and strin-2. The birds were procured from Thailand via Bangladeshi agents.

Before starting the experiment the birds were divided into three groups depending on achieved body weight at 22 weeks of age, which were previously grown from day-old. These three groups were overweight, standard weight and underweight. Here standard weight groups were considers according to the breeders information available in the breeder manual. Here birds those achieved target body weight and also within ±10% of the target body weight was considered as standard. Those weighed more than 10% and less than 10% were considered as overweight and underweight respectively. Fertility and hatchability traits and day-old chicks' weight after hatching were observed for each group separately.

House preparation

The houses were made clean and washed with tap water top to bottom and each and every corner and then disinfected with disinfectant, phenyl and

subsequently dried well. After drying small pens were prepared with wire netting having 305 cm (10 ft) length and 183 cm (6 ft) width for each. Each pen was suitable for housing 14 chickens (i.e. 12 females and 2 males). At the later stage of preparation of the houses the litter materials (Sawdust) were spread on the floor as bedding material at 4-5 cm depth for birds' comfort ability. Then birds were placed in the individual pens.

Preparation of egg laying box

Low cost wood materials were used to prepare the nest. The nests were prepared in such a dimension that the hens got adequate space inside. The dimension of the nests i.e. height, width and length was 45 cm × 45 cm × 45 cm. the nests were placed at a corner of the each pen so that the birds did not feel any disturb at the time of laying.

The experiment

There were three treatment and each treatments had tree replications. Each replication contained 12 hens and 2 males. The treatments were considered as over-weight, standard weight and under-weight group. For each strain similar treatment and replication were arranged. For both the strains similar number birds were managed the numbers of birds were 126 for each strain. Duration of the experiment was 20 weeks (22-42 weeks of age).

Introduction of birds in the pen

Previously grown (day-old to 22 weeks of age) chickens were weighed and introduced in the pen according to the layout of the experiment depending on body weight. For each treatment and replication birds were considered randomly. Efforts were made to maintain uniformity for each replication on each treatment in relation to body weight.

Feed and feeding management

Three kinds of feed were fed to the experimental birds. These diets were pre-breeder diet, Breeder diet-I and Breeder die-IIfor female birds. For male birds, breeder diet males were supplied. The feeds were procured from a reputed feed mill (Aftab Feed Mill Ltd. Bhagalpur, Bajitpur, Kishoregonj). Pre-breeder, Breeder diet –I, Breeder diet-II and Breeder diet male were used depending on the production status of the broiler breeder birds following breeders manuals.

The feeds were supplied to the experimental birds as pellets. The ingredients composition and nutrients composition of different diets used for breeder are given in Table 1.

Table 1: The nutrient composition of different diets used for breeders

Nutrients	Pre breeder diet	Breeder diet-I	Breeder diet-II	Breeder diet-male
Dry matter (%)	84.81	83.21	78.32	88.64
ME (Kcal/kg)	2850	2800	2800	2736.11
Crude protein (%)	16.81	16.50	15.65	14.60
Crude fiber (%)	3.58	3.25	3.35	4.00
Calcium (%)	1.30	3.30	3.40	0.98
Av. Phosphorus (%)	0.42	0.44	0.36	0.40
Lysine (%)	0.82	0.78	0.80	0.61
Methionine (%)	0.36	0.43	0.33	0.35
Meth + Cyst (%)	0.63	0.71	0.57	0.62
Threonine (%)	0.59	0.61	0.58	0.52
Tryptophan (%)	0.22	0.21	0.22	0.19
Choline (mg/kg)	2001.24	1963.75	1929.44	1886.45
Chlorine (%)	0.23	0.21	0.18	0.24
Sodium (%)	0.20	0.17	0.16	0.17
Linoleic acid (%)	1.71	2.82	2.70	1.62

Nutrient concentrations were in according to formulations

Feeding procedure

Feed were supplied to birds as per breeders' instructions. Before the onset of production, the amount of feed supplied to the birds dependent on age and body weight. When the birds came into production, the amount of feed was adjusted on the basis of percent production obtained from experimental bird. Feed were supplied to the birds once a day, which was early in the morning. Feeds were supplied in the round feeder made of plastic materials. Two feeders were used in each pen, which was sufficient for 12 female birds.

As the composition of male feed was different from female breeder diet, the male feeds were supplied separately. One round feeder was placed in a position which is high enough for the female birds could not feed but the female consumed feed from the particular feeder. As the male birds were larger than female birds, there was no problem in separate feeding. From the feeder provided for female, male could not obtain feed due to grill used between those feeders.

Watering procedure

Normally water was supplied to the birds three times a day to full fill their requirements. When the weather becomes hot, the excess amount of water was provided specially when the temperature exceeded 25^0C. Clean, cool and fresh tube-well water was always provided to the birds. The multi-vitamin powder also provided with the drinking water. For all birds (both males and females) situated in a pen, only a round waterer made of plastic materials was used.

Litter management

A mixture of sawdust and sand were used for litter. At the initial stage of experiment each pen was prepared for chickens providing sawdust at 4-5 cm in depth. Later both the sawdust and sand was added to all pens, when required. When the new litter was added with the remaining, the damp portion of litter including droppings materials removed, and disposed first and then the new litter was added to increase the depth of the litter. Due to removal of damp litter and addition of new ones birds were comfortable, moisture content of litter was reduced and soiled eggs also reduced.

Bio-security measures

Strict bio-security measures were taken for the breeder birds from procurement to end of the experiment i.e. birds were procured from reputed farms, vaccination were run properly, entrance of personnel's were prohibited. For cleaning and disinfection purpose necessary measures and proper disinfectant and necessary clothing's were used. The birds were kept different from other birds and the shed and surroundings were kept clean.

Lighting management

Bore the start of the experiment, lighting program was appropriate for both the strains. After 22 weeks to end 15-16 hours of light were maintained and lighting hours was adjusted depending on the day length period. Additional artificial light was provided with the natural daylight to fulfill the recommended light period.

Medication and vaccination

Though the experimental birds were not affected by serious illness but some water soluble vitamins, electrolytes were provided to meet up the requirement of laying breeders and de-worming procedure were run to overcome the worm infestations. Vaccination was completed before the experiment started.

Temperature management

The birds were housed in an open sided house. Environmental temperature was almost satisfactory but sometimes, especially in summer, temperature became high. When the temperature became high (i.e. when exceeded 25^0C) extra clean, cool water was supplied to save the birds from the stressed condition. To reduce the stress, electrolytes were used with the drinking water. The other measures which were taken were use of room ventilator, wet gunny bags on the roof and/or spraying of water on the roof. When the temperature was cold, during the winter, the room heater was used to increase the room temperature

and gunny bags were hanged surrounding the room.

Humidity control

Over the experimental period, the humidity level was always satisfactory. So, humidity control was not required. The satisfactory level of relative humidity for birds is 60-65 % but observed humidity level was 55-80% that was almost satisfactory.

Air flow (Ventilation)

As open sided house was used for the experimental birds, air control was not required. Free air was allowed to move inside and naturally, so that adequate ventilation was made possible when required.

Introduction of male in the flock

At 30 weeks of age, when the birds come to 25% production, males were introduced gradually for breeding purpose.

Post-mortem examination

Dead birds were brought to the pathology laboratory and post mortem examination (autopsy) was carried out to investigate the real cause of death. The dead birds were subsequently disposed of properly.

Record keeping

Temperature

Temperature was recorded for the house was also taken. The temperature was read four times a day i.e. at 6 AM, 12 AM, 6 PM and 12 PM. The average temperature was between 24-28^{0}C.

Humidity

To measure the humidity level in the experimental house dry and wet bulb thermometer was used and from the difference of dry and wet bulb thermometer reading humidity percent was determined. Humidity percent was also recorded four times a day i.e. at 6 AM, 12 AM, 6 PM and 12 PM. The recorded average humidity was 60-65%.

Survivability

Mortality when occurred was recorded. From the record the survivability was calculated for each treatment and replication.

Day-old chicks' weight

The stored healthy chicks were weighed replication wise that were obtained from the breeding flock. The records of weight were kept separately for each replication.

Statistical analysis

With all other data the survivability percent and Weight of day-old chicks were also recorded. Collected data were analyzed statistically in a Complete Randomized Design (CRD) using MSTAT statistical computer package program. Significant differences among the means were separated by least square design (LSD).

RESULTS AND DISCUSSION

Body weight gain

In case of strain-1, the body of overweight, standard weight and underweight birds at 22 weeks of age were 2490, 2347 and 2162g respectively. At the onset of production i.e. at 26 weeks of age the weights were 3040, 2882 and 2719g which were adjusted according to the plan of the experiment, the final body weights i.e. at 42 weeks of age the weights were 4328, 4158 and 4088g for these three treatment groups (Table 2). The body weight showed an increasing trend up to 32 weeks of age for all the treatments groups and thereafter the body weight went almost linear up to the end of the experiment (Figure 1). Before 32nd weeks, the body weight showed an increasing trend because the egg production was not obtained up to 26 weeks of age and then laying was started but production level was minimum during the preliminary stage at the onset of production. Hockings (2009) stated that if body weight target is maintained at the current recommended level the egg production will be increased though the body weight less than over weight birds. Hurwitz and

Plavnik (1989) stated that body weight at onset of production significantly increased as maturation age was delayed. The body weight thereafter went linear due to an increase in egg production and for the egg production goes to the peak rapidly. The result obtained by Pearson and Herron (1982) supported the above result; they showed that body weight gain and egg number was negatively correlated.

Table 2: Performance characteristics of strain-1

Variable	Overweight group	Standard weight group	Underweight group	Level of significance
Initial body weight (g/day)	2490[a]	2347[b]	2162[c]	**
Body weight at maturity (g/day)	3040[a]	2882[ab]	2719[b]	**
Final body weight (g/day)	4328[a]	4258[b]	4088[b]	*
Egg production (hen-day %)	42.50	51.47	43.32	NS
Egg weight (g/egg)	62.90	67.30	63.69	NS
Feed consumption (g/bird)	154.6	153.8	153.8	NS
Broken egg (%)	7.96	4.52	6.95	NS
Soft-shelled egg (%)	7.33	4.40	6.o6	NS
Livability (%)	97.22	100	100	NS
Day old chicks weight	50	50.62	49.75	NS

Same letter in each row indicates not significant and different letter in same row indicates significant

Table 3: Performance characteristics of strain-2

Variable	Overweight group	Standard weight group	Underweight group	Level of significance
Initial body weight (g/day)	2596	2352	2116	*
Body weight at maturity (g/day)	3126	3066	2862	NS
Final body weight (g/day)	3570	3470	3366	NS
Egg production (hen-day %)	50.09	59.29	50.19	NS
Egg weight (g/egg)	61.22	63.75	61.63	NS
Feed consumption (g/bird)	193.38	198.36	197.91	NS
Broken egg (%)	8.42	8.52	6.92	NS
Soft-shelled egg (%)	3.63	4.38	4.90	NS
Livability (%)	95.83	100	100	NS
Day-old chicks weight	43.67	44.54	43.25	NS

In case of strain 2, the body weight was increased in a manner similar to strain 1, an increasing trend upto 28 weeks and then went slightly down due to high environmental temperature which was suddenly risen up to 30^0C, the body weight then increased slowly. Pym and Dillon (1974) indicated that during high environmental temperature birds drunk more and consume less feed and ultimately body weight gain was affected. Body of overweight, standard weight and underweight birds at 22 weeks of age were 2596, 2352 and 2116g, at onset of production i.e. at 26 weeks of age were 3126, 3066 and 2862g respectively. The final body weights at 42 weeks of age were 3570, 3470 and 3366g respectively for overweight, standard weight and underweight group (Table 3).

The body weights of all group was increased up to 32 weeks of age and then remained consistent up to 42 weeks of age (Figure 1). Whereas in strain 2 the body weight of all group increased up to 40 weeks of age with little decline in 30 weeks age. After 4o weeks the body weights of all group declined (Figure 2). For both strain 1 and strain 2 birds of all groups weighed higher than the standard group. It was because the amount of feed was adjusted before the onset of laying depending on achieved body weight and thereafter feed was supplied depending on expected egg production level of the flock following the breeder instructions. The decline trend was observed from the 32 weeks of age for strain 1 (Figure 1) and from 28 weeks of age for strain 2 (Figure 2).

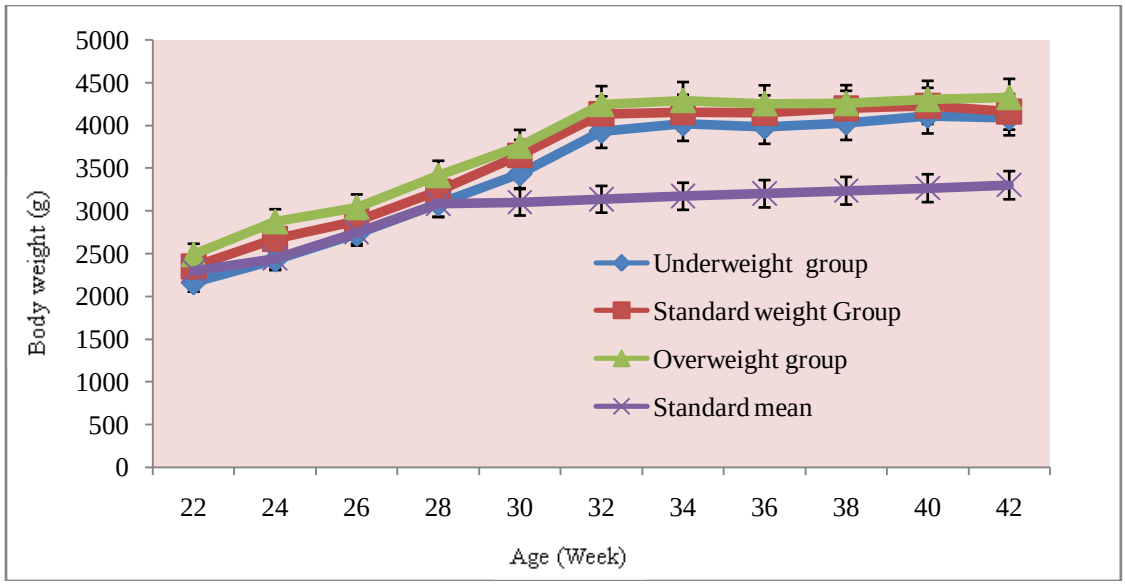

Figure 1: Achieved body weight of strain 1 during experimental period for three treatment groups in comparison with standard weight

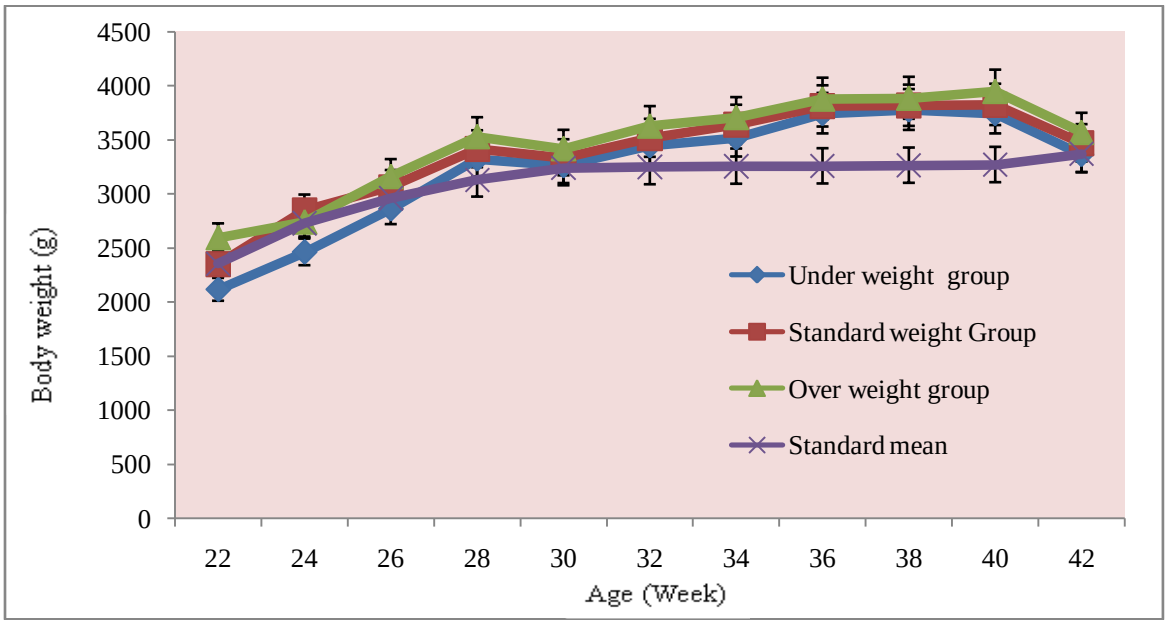

Figure 2: Achieved body weight of strain 2 during experimental period for three treatment groups in comparison with standard weight

Feed consumption

Feed consumption among the treatment groups was almost similar in strain 1. Average feed consumed was 154.6, 153.8 and 153.8 g/day/bird for overweight, standard weight and underweight groups, respectively (Table 2).

In strain 2, feed consumption didn't vary widely rather it was similar. Average feed consumption in this strain was 158.0, 150.4 and 150.4 g/day/bird

respectively for overweight, standard weight and underweight groups, respectively (Table 3).

Actually, feed consumption didn't vary widely among the treatment groups because the birds were reared under feed restriction. Also between the strain 1 and 2 the feed consumption did not vary widely because feed supply was depended on level of production and production period.

Egg production

In strain 1, average hen-day egg production during all over the experimental period was 42.5, 51.4 and 43.3% for overweight, standard weight and underweight group respectively (Table 2). The hen-day egg production differed significantly among the treatment groups in different weeks. Among the treatment groups, the group, which had body weight within the standard range (according to breeders' instruction), produced more eggs than overweight and underweight groups (Figure 3). Rahman et al. (2015) stated that the birds which reached sexual maturity in later stage compared to standard persistency of egg production became shorter, i.e. egg production became minimum. Kumar et al. (1998) and Robins et al. (1988) showed similar results who indicated that birds which were within the optimum weight at maturity produced maximum eggs. The groups which had overweight than the other groups produced lesser number of eggs. This result was in agreement with Robinson and Wilson (1996). Excessive body weight in broiler breeder female was negatively correlated with the hen-day egg production. This was also reported by Spralt and Lesson (1987). Robinson (1995) contradicts with the above result, who out lined that heaviest birds perform best in terms of egg production and similar result had also been obtained by Lilburn and Myers-Miller (1990). The underweight birds also produced lesser number of eggs because they come into maturity later than other two groups. Renden (1987) stated that the rate of production was not affected by the body Weight of birds; similar result also reported by Okpokho et al. (1987).

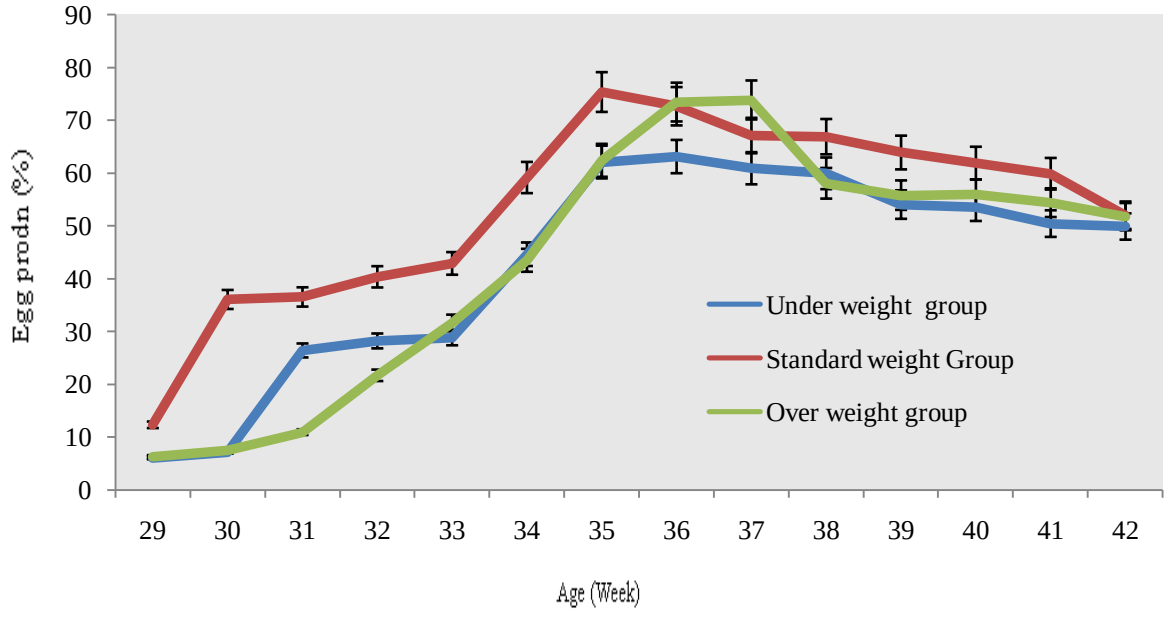

Figure 3: Weekly average hen-day egg production of strain 1 for different treatment groups

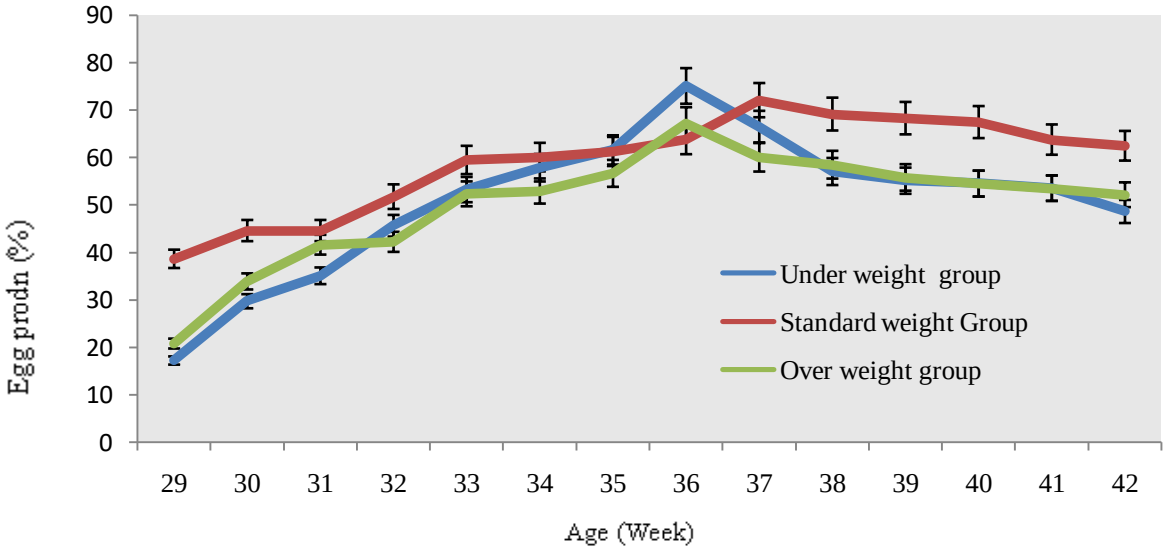

Figure 4: Weekly average hen-day egg production of strain 2 for different treatment groups

Like strain 1, the strain 2 showed more or less similar trends in the result (Figure 4) except little decline after 36 weeks age. The hen-day egg productions were 50.1, 59.2 and 50.1% respectively for overweight, standard weight and underweight group respectively (Table 3). In this strain 2, both the underweight and overweight groups produced eggs at lower rates (Figure 4). Renden and Marple (1986) supported this result. The standard weight group produced large number of eggs.

Actually a minimum body weight is required for the egg production and both the overweight and underweight enhances egg production. According to Lesson and Summer (1987) medium weight birds produced more eggs and Broody et al (1980) said a minimum body weight and age require for the onset of lay.

In strain 1, the birds come into maturity at 190.67, 198.33 and 204.66 day-old age for overweight, standard weight and underweight groups and incase of strain 2 the birds come into laying stage at 187.5, 187.0 and 187.0 days-old age respectively (Table 4). Kumar et al 1998 showed the broiler dam came into sexually maturity at the age of 146 day. In this study, the broiler breeder came at maturity later than expected time. This was probably because the birds were managed at open sided house of tropical environmental condition of Bangladesh.

Table 4: Age of sexual maturity for both the strains

Treatment group	Age of Maturity (days)	
	Strain 1	Strain 2
Overweight group	190.67	187.50
Standard weight group	198.33	187.00
Underweight group	204,66	187.00

Egg weight

Egg weight for both the strains in 3 different groups (overweight, standard weight and underweight) did not differ significantly with the body weight at maturity. The average egg weights for strain 1 were 62.9, 67.3 and 63.6 g for overweight, standard weight and underweight group respectively (Table 2). Among the treatments the egg weight did not differ significantly which is in accordance with the results provided by Perez et al. (1992). Perez et al showed the initial body weight at maturity has no significant effect on egg weight. Egg weight did

not differ significantly among the treatment groups in all over the period except of 29-35 and 42 weeks of age for strain 1. Rahman et al. (2015) stated that birds which were reached in later stage laid egg that weight ranges 53 to 60g and eggs were suitable for hatching. The egg weight was increased with birds' age. Gous et al. (2000) and Bermudez et al. (1992) had similar comments, who reported egg weight increases with the increasing birds' age. The egg weight did not differ with the treatment groups i.e. with the birds' weight groups, but Triuwanta et al. (1992) showed reverse result. They showed, maternal body weight enhanced egg weight.

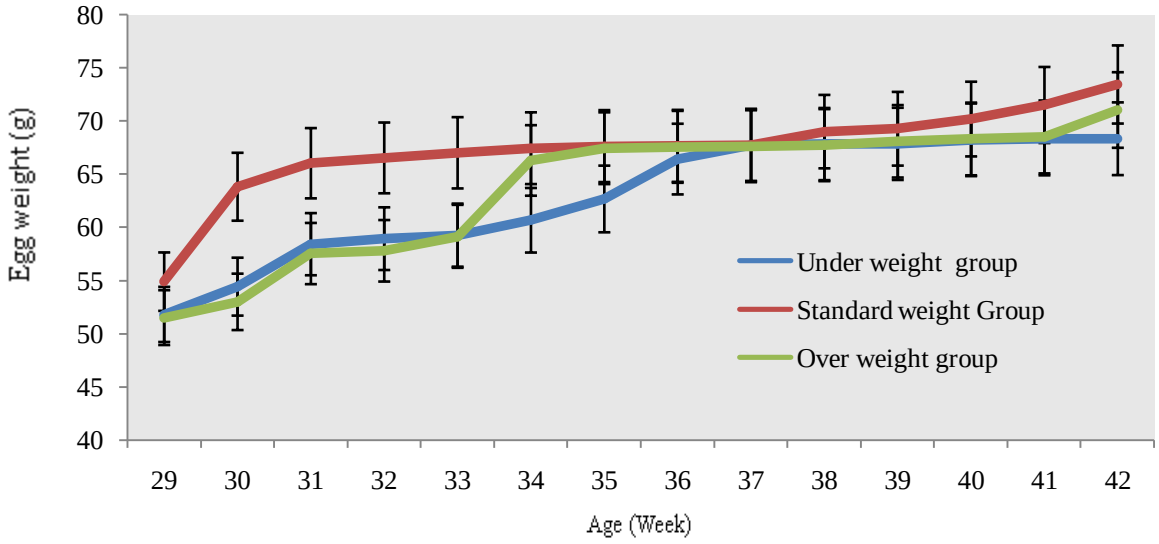

Figure 5: Weekly average egg weight of strain 1 for different treatment groups

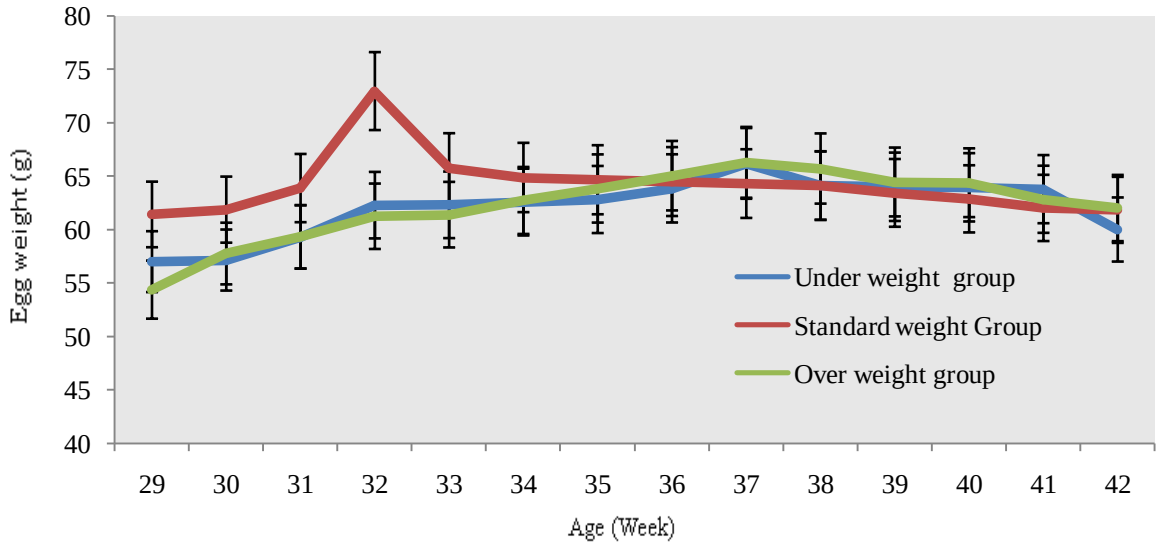

Figure 6: Weekly average egg weight of strain 2 for different treatment groups

In case of strain 2, the average egg weights were 61.2, 63.8 and 61.6 g for the three treatment groups' (overweight, standard weight and underweight groups) respectively (Figure 6). Similarly in strain 1, egg weight did not differ among the treatment groups and this result is supported by Lilburn et al. (1990). The result shows that egg weight did not differ among the experimental period except of 29 to 33 weeks of age. Srivastava et al. (1993) indicated that eggs

weight and body weight at 40 weeks showed negative correlation while body weight at 20 weeks showed positive response. However, in this study, the egg weight increased with the bird's age, because the birds weight also increased with the age. But in similar age, egg weight did not differ with the different body weight treatment groups. This result is supported by the result obtained by Robin et al. (1988) who revealed, egg weight not affected by body weight. The egg weights were fluctuated more for underweight group in case of both the strains (Figure 5 & 6). The study summarize that egg weight in the early stage of laying was lower and it increases with the age and weight of birds. Among the similar age group the egg weight did not differ significantly.

Egg abnormalities

Broken eggs

The percent of broken eggs in strain-1 were 7.96, 4.52 and 6.95% for overweight, standard weight and underweight group respectively, (Table 2). In this case standard weight group produced less number of broken eggs than the other two groups. The overweight group produced more broken eggs which is probably due to higher body weight. The underweight group also produced more broken eggs than the standard weight group which is probably due to underweight group laid eggs with thinner shelled than other two groups.

In strain 2, there was no wide variation in the incidence of broken eggs among the treatment groups. Here, underweight groups produced slightly less number of broken eggs which might be due to the less body weight of the birds. The percent of broken egg in strain 2 were 8.42, 8.52 and 6.92 respectively for overweight, standard weight and underweight group respectively (Table 3).

Soft-shelled egg percent

Generally birds produced soft-shelled eggs. It may be due to the lack of specific nutrients or may be due to other causes. The layer from strain 1, produced 7.33, 4.40 and 6.06% soft-shelled eggs for overweight, standard weight and underweight treatment groups, respectively (Table 2). The standard weight groups produced less number of soft-shelled eggs in comparison with other two treatment groups. The underweight groups produced slightly less number of soft-shelled eggs than the overweight groups.

In case of strain 2, over weight group produced slightly less number of soft-shelled eggs in comparison to standard weight and underweight groups. Soft-shelled eggs observed in the strain 2 for overweight, standard weight and underweight groups were 3.63, 4.38 and 4.90% respectively (Table 3).

Survivability

The survivability of strain 1 in overweight, standard weight and underweight groups were 97.2, 100 and 100% (Table 2). In strain 2 the survivability was 95.8, 100 and 100% respectively (Table 3). Birds of both strains were more or less healthy throughout the experimental period. Birds were closely observed and there were no abnormal birds throughout the period except one bird of strain 1 and one bird of strain 2 were died due to mycoplasmosis (later confirmed). Considering above matter the survivability was almost satisfactory for both the strains.

Day-old chick weight

Day-old chick weight is also determinant of parent performance characteristics and day-old chick weight indicates the commercial broiler characteristic obtained from a particular parent line. As one of the hatching characters, day-old chick weight also studied. Among different weight groups the chick weight did not differ significantly i.e. body weight treatment groups did not affect chick weight. The day-old chick weights for strain-1, was 50, 50.6 and 49.7 g (Table 2) respectively for the treatment groups. Though the body weight treatment did not affect the day-old chick weight, the day-old chicks obtained from the strain was higher than the chicks obtained from the strain 2 (Table 3).

CONCLUSION

Both the overweight and underweight birds produced significantly less number of eggs than

the standard weight groups when the egg production was calculated as hen-day percent. The egg weight did not affect significantly the egg production. The day-old chicks weight was satisfactory for both the strains. The soft-shelled egg and egg breakage were minimum in standard weight groups. It also supports to rear broiler parent with which are within the standard weight groups.

The production performance of standard weight group birds was satisfactory and the standard weight birds were good layers than other body weight treatment groups. The egg weight did not vary widely in the body weight treatment groups. The birds within the recommended body weight and the body weight within ±10% of the standard birds, which were considered in this experiment as standard group performed better. Such body weight group should be maintaining under Bangladesh conditions to obtain good potentiality from broiler parents.

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