

A STUDY ON MANAGEMENT SYSTEM OF AN INTENSIVE PIGEON FARMING AT CHITTAGONG

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The study was conducted on the management including housing, feeding, productive and reproductive performance of pigeons in an intensive pigeon farm at Chittagong, Bangladesh. The pigeons were reared in modified poultry cages. For the movements of pigeons, a small paved area of 13 x 12 ft was provided in the farm. Available feed supplied to the pigeon were rice, wheat, cowpea, mustard oil cake, germinating gram and lentil as grain mix and oyster shell, grit, dicalcium phosphate and salt as mineral mix. The supplied diet contained ME (2993.8 kcal/Kg) and CP (15. %). The body weight was significantly ($P<0.01$) different among all the varieties of pigeons. However, there was no significant ($P>0.01$) difference of body weights between male and female pigeons. It was observed that the age of maturity, incubation period and productive life were ranging from 6-7 months, 18-21 days and 6-9 years respectively. The production of squabs was ranging from 5-12 pair per year. Mostly prevailing diseases were New Castle disease, Pigeon Pox, Coryza and Parasitic infestation accordingly. From the study, it was observed that the owner of that farm reared pigeons as his hobby and the production level was also satisfactory. As there is an increased demand of pigeon as food or ornamental birds in this area, he can take the chance to earn money. Further extensive studies on pigeon of larger population and of different areas should be done to know the management practice in Bangladesh as a whole and of individual varieties.

Keywords: Pigeon, Pigeon farming.

Pigeon farming has been practiced in Bangladesh from time immemorial. Many people of this country are engaged in different poultry rearing where pigeon is one of them. More than 80 percent of the rural households rear poultry (Haque 1987 and Ahmed 1988). The contributions of pigeon have not yet been considered in relation to the contribution of livestock sub-sector and whole poultry production though the pigeons provide alternative source of animal protein. Comparatively low investment, care less, less feed and housing cost involved, easy and economic husbandry practices, short reproduction cycle and less disease occurrence are observed for pigeon farming. Pigeons are used in natural beautification and ornamental birds as source of recreation, source of palatable, delicious and easily digestible animal protein, sources of bio-fertilizer especially for family gardening and used as the laboratory animal in case of genetic and hormonal studies. Hence profitable pigeon farming may be an easy and reliable source of employment opportunity, way of family labour utilization and cash income. Sustainable and increasing rate of pigeon farming may enhance the rate of reducing the gap of animal protein consumption/deficiency; increase the rate of poverty reduction and it may improve the socio-economic status of the rural poor community (Asaduzzaman *et al.*, 2007). The current study was conducted to observe the total management practices of a pigeon farm and to formulate some suggestions about pigeon farming in Chittagong, Bangladesh.

MATERIALS AND METHODS

The Pigeon farm was located at Chittagong district of Bangladesh. The area and the farm were selected purposefully and randomly. Keeping in view the objectives of the study, the farm was also chosen on information that owner of this farm have been rearing pigeons of different varieties since long time.

Interview schedule was carefully designed towards the farm owner and attendant keeping the objectives in view. The schedule contained both open and closed form questions. Most easy, simple and direct questions were asked to obtain information. Varieties of the pigeons were identified by observing their body characteristics and behavior. The parameters such as feeds, feeding pattern and management system were recorded by interviewing with the owner and the attendant. Some information was also taken by me such as the measurement of house; height and nest place and weight of the pigeons on the farm. The reproductive parameters like age of sexual maturity, incubation period, productive life of male and female pigeons and number of squab production were collected from the record book of the farm. Disease prevalence on the farm was observed physically and data regarding this were collected from the farm record book. For the investigation of parasitic infestation by coproscopy, feces of pigeons were collected and then brought to the laboratory of Department of Pathology and Parasitology at Chittagong Veterinary and Animal Sciences University, Chittagong.

Qualitative data were converted into quantitative forms by means of suitable score whenever needed and the local units were converted into standard unit scales. Collected data were compiled, tabulated and analyzed. Simple descriptive statistical techniques were used to explain the data. Minimum, maximum, median and percentage were used mainly to illustrate the results. ANOVA and T-test was also done to describe some results.

RESULTS AND DISCUSSION

Varieties of Pigeon

There were 96 pigeons of 10 varieties in the

farm. Among all of them, Giribaz was the largest proportion of 22 in number and Lark was in smallest of 2 in number. Second largest proportion was Sirazee which 20 in number. The King and Peswari were in equal proportion. The other varieties were Pouter, Strasser, Fantail, Homer and Jacobin. Whereas Asaduzzaman *et al.* (2007) reported that most of the pigeon farmers of Bangladesh had no idea about the breeds or varieties of pigeon. They also reported that usually pigeons reared as pairs. So, male female ratio should be 1.0. Among all the pigeons half were male and half were female in the current observation which correlates with that given ratio.

Housing of Pigeon

The house, in which pigeons reared, was a one storied building. The size of the house was 15×12×8 cuft. There was an open paved area of 13×12 sqft in front of this house enclosed by wire net. It was used for the movement of pigeons at day time. An exhausting fan was used for assessing ventilation. The house was faced at southern direction whereas Bolla (2007) reported that for maximum production and minimum disease risk the pigeon house should be preferably facing north-east.

Modified poultry cage system was used to rear the pigeons in this farm. All cages were iron made. There was tray under every pen for the collection of droppings. One pair of pigeon was kept in each pen. From the study, it was observed that the provided space measurement to each pair of pigeon was 59×51×51 cucm (in case of king & potter it was about 92×51×51 cucm). These results disagreed by Lewis *et al.* (2003) who reported that the length, width and height of the cages should be 27 inches or 69 cm, 32 inches or 81 cm, 24 inches or 61 cm for two hens. The size of the cages in the current study was less than the above data because the body size of pigeon is lower than chicken.

Each of the pen contained one feeder and one waterer. Waterers were washed daily with a sanitizing agent, which is supported by the findings of Mellot and Hilliker (2008).

Feeding of Pigeon

In this study it was observed that, grain mix and mineral mix were supplied to the pigeon. Grain mix was given 45 gm per bird daily and the mineral mix was given 6.5 gm per bird daily. The total amount of feed was 51.5 gm which partially agrees with

Anonymous (1901) and Bretton (1914). They reported that the feed intake per pigeon per day was 47.35g which was somewhat lower than the present observation. Owner said that, mineral mix was given for the improvement of thickness of eggshell said by the owner.

Table 3: Grain mix ration in the farm.

| Ingredients | Quantity (kg) | ME (kcal/100kg) | CP (%) |
|------------------|---------------|-----------------|--------|
| Rice | 10 | 293.7 | 1.19 |
| Wheat | 70 | 2131.5 | 9.1 |
| Cowpea | 5 | 150.2 | 1.42 |
| Mustard Oil Cake | 5 | 118 | 1.75 |
| Germinating Gram | 5 | 138.3 | 1.04 |
| Lentil | 5 | 117.1 | 0.625 |
| Total | 100 | 2993.8 | 15.125 |

Table 4: Mineral mix ration in the farm.

| Ingredients | Quantity (kg) | Ca (%) | P (%) |
|---------------------|---------------|--------|-------|
| Oyster shell | 22.7 | 8.467 | 0.002 |
| Grit | 11.3 | 4.045 | 0.002 |
| Dicalcium phosphate | 9.1 | 2.21 | 1.656 |
| Salt | 2.3 | - | - |
| Total | 100 | 14.72 | 1.66 |

In the study, the ingredients were rice, wheat, cowpea, mustard oil cake, germinating gram and lentil for grain mix. Among these, wheat was 70% in case of grain mix. These results disagree with Jalal *et al.* (2011). They observed that yellow corn, grain sorghum, cowpeas or field peas, wheat, oat groat and hempseed were used as grain mix and the quantity of wheat was 15%. These variations may be caused due to availability of ingredients or environmental factors. The ingredients for mineral mix and its quantity of current observation are supported by the findings of Jalal *et al.* (2011).

In addition, the supplied diet contained ME (2993.8 kcal/kg) and CP (15.125%) that agrees with Khashaba and Ibrahim (2007) who reported that diet containing 2800 kcal/kg with 14-16% CP level was suitable requirement and satisfactory for production and reproduction of pigeons during the spring, autumn and winter seasons.

Moreover, the grain mix and mineral mix were provided separately in the farm which agrees with Mellot and Hilliker (2008). They

indicated that most pigeons performed well if they were provided with adequate grain mix and mineral mix in separate feeders.

Vitamin-mineral and Water Supplement

Fast AD₃E[®] (Vitamin A, D & E preparation)
- 0.25ml

DB vitamin[®] (Vitamin and Mineral preparation) - 0.25ml

Digestivio[®] (Acidifier)
- 0.025ml

Normal saline

- 100ml/bird (4% saline solution)

Here, Fast AD₃E[®] and DB[®] vitamin were supplied as vitamin mineral source, for 5 days consecutively and then made an interval of 10 days and again continued. Normal saline was given in summer season to reduce stress & to prevent diarrhea, if any birds delayed in egg laying, then 4 drops of Fast AD₃E[®] mixing with 0.5 liter water was given to that bird for egg laying within 7 day, said by the owner of farm.

Besides, it was observed that water was supplied once daily as about 110 ml water

per day for per bird which disagrees with the findings of Bolla (2007) who indicated that the average water requirement for a bird was 245ml per day. The different types of variety may be responsible for variation in water consumption.

Productive and Reproductive Performance Body Weight

Homer and King were on the highest position whereas Peswari in the lowest position. The weight of Giribaz was ranges from 350 to 400 gm whereas Lark also had the similar body weight of 400 gm. Sirazee was ranges from 580 to 610 gm where

Fantail was ranges from 490 to 520 gm which is lower than Sirazee. Peswari and Strasser almost same in 700 gm. Pouter was also similar with Peswari. The highest body weight of Jacobin was 750 gm which was the median body weight of King. Jalal *et al.* (2011) reported that the weight of adult pigeons were ranges from 640 to 850gm. The current study showed that the weight ranges from 270 to 810 gm. And from ANOVA, the p-value was <0.01 which indicate that the body weight among different varieties were truly different. The variation may be due to difference in variety and weather.

Table 6: Analysis of variance of mean body weight among different varieties of pigeon.

| Source | SS | df | MS | F | P-value |
|---------------|------------|----|-----------|-------|---------|
| Between group | 1787180.47 | 9 | 198575.61 | 58.51 | <0.01 |
| Within group | 291885.15 | 86 | 3394.01 | | |

Table 7: T-test of mean body weights between male and female pigeons.

| Variable | Observation | Mean | Standard deviation | 95% Conf. Interval | | p-value |
|------------|-------------|--------|--------------------|--------------------|--------|---------|
| Female | 48 | 574.79 | 146.82 | 532.1583 | 617.43 | 0.67 |
| Male | 48 | 588.33 | 150.28 | 544.6963 | 631.97 | |
| Combined | 96 | 581.56 | 147.93 | 551.588 | 611.54 | |
| Difference | | -13.54 | | -73.75316 | 46.67 | |

Different Reproductive traits

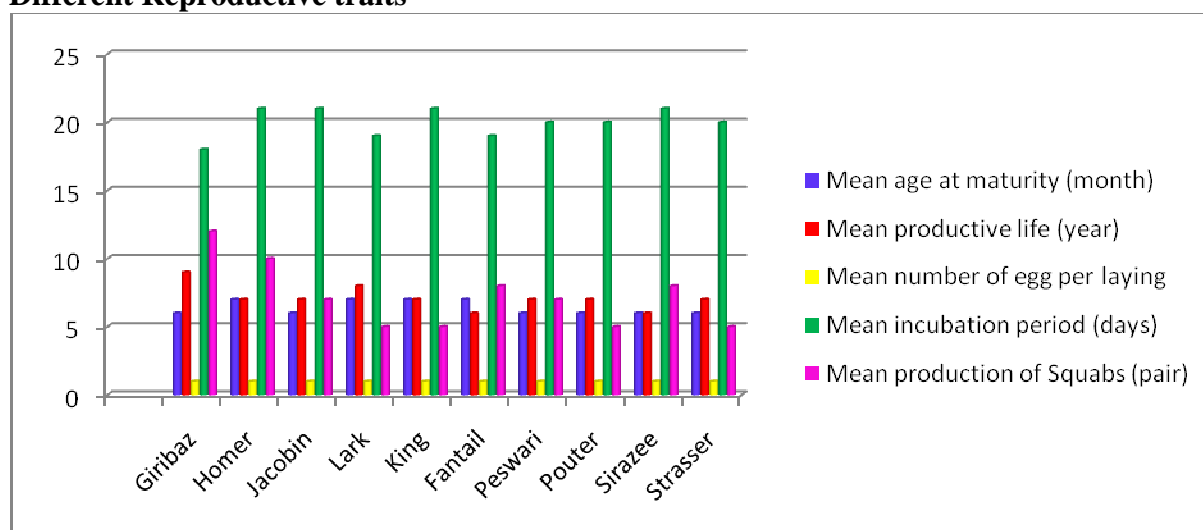


Figure 1: Mean values of age at maturity, productive life, number of egg per laying, incubation period and production of squabs of different varieties of pigeon in the farm.

The body weight of male pigeons was 280-810 gm which was somewhat higher than the body weight of female pigeons ranges from 270-800 gm. The median body weight of female pigeons was 600 gm which was slightly lower than the median body weight of male pigeons 610 gm. By using t-test, estimated p-value was not statistically significant ($p > 0.01$) indicating there was no difference between body weight of male and female in the current study. These findings contradict with Kigir *et al.* (2010). They observed that male pigeon had more body weight than female pigeons.

The age when the pigeon being sexually mature was 7 month in case of Homer, Lark, Fantail and king and 6 month in case of Giribaz, Jacobin, Peswari, Pouter, Sirazee and Strasser. So, the age of sexual maturity in the current study was ranging from 6-7 months which is supported by the findings of Sturtevent and Hollander (1978).

Strasser, Pouter, King and Lark produced 5 pairs of pigeon per year whereas Giribaz and Homer produced 12 and 10 pairs respectively. In addition Sirazee and Fantail produced 8 pairs and Jacobin and Peswari produced 7 pairs per year. So, production of squabs by a pair of breeder pigeons was ranging 5-12 pair per year which agrees with the findings of Levi (1969). He reported that a pair of breeder pigeon could produce 18-20 squabs per year.

Jalal *et al.* (2011) reported that the incubation period of pigeon was 18 days which agree with the current study. However, 21 days of incubation period was observed in case of Homer, Jacobin, King and Sirazee in this study. On the other hand, 18 days of incubation period was observed in Giribaz.

Moreover, the productive life was 5 years for male and 7-8 years for female which are nearly in consistent with the findings of Bolla (2007). He reported that the productive life for male was 5 years and for female 10 years.

In case of Pouter and King, it was observed that, plastic dummy eggs were kept on their dovecotes during the incubation period and their eggs were transferred into the dovecotes of Sirazee or Giribaz for hatching

as because, King and Pouter were used to waste their eggs during incubation.

It was also observed that the eggs of first two clutches for all the varieties were unable to hatch any squabs. In this regard, Miller (1972) reported that the eggs of first clutches were 50% infertile.

Health Management

Diseases of Pigeon

The common diseases of the farm were New Castle disease, Pigeon Pox, Coryza and Parasitic infestation. The New Castle disease was mostly prevalent in the farm which agrees with the observation of Hofstad (1978). In case of new castle disease and pigeon pox, Tetracycline[®] (antibiotic) therapy was applied in addition with vitamin and mineral supplement. Doxycab[®] was administered in the treatment of Coryza.

In the study we found that many of the pigeons affected with ecto-parasites such as lice, mites and endo-parasities like *Ascaridia* (round worm), *Capillaria* (crop worm and hair worms), *Syngamus tracheae* (grape worms); which is supported by the findings of Schock and Cooper (1978). Parasitic infestation was reduced through administering Vermic[®] (anti-parasiting agent) orally and applying antiseptic spray.

Mortality of Pigeon

After observing the data of previous 6 months, we found, mortality of pigeon was 14.58%. The mortality rate was not same in all varieties. The mortality rate was more in case of heavy breeds, whereas it was much lower in case of light breeds. In this study, the overall mortality rate was 14% which is more or less similar with the findings of Asaduzzaman *et al.* (2007) who found 5-15 %. Most of the mortality occurs from the attack of predators and disease. Transportation mortality was negligible in case of pigeon and squab. This may be an advantage over chicken.

Disposal of the waste and Carcass

The waste materials from the pigeons were collected regularly and then disposed into a pit. The death birds were buried into the earth. But Yilmaz *et al.* (2007) indicated that pigeon manure could be an organic fertilizer resource.

CONCLUSION

The management system of the farm was almost near about scientific standard level. As a consequence, the production level was also satisfactory. By improving feeding, breeding system management and other environmental support the production level can be improved more. On the other hand, it may be a great source of income as well. In the future, further extensive studies on pigeon of larger population and of different areas should be done to know the management practice of individual varieties.

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