**INTRODUCTION**

Turkey (Meleagris Gallopavo) is a large gallinaceous bird of the family Meleagridaethat is native of North America, domesticated in Europe and isnow an important source of food in many parts of the world. Turkey has introduced in Bangladesha couple of years ago. There are three varieties of turkey commonly available in Bangladesh: 1. Board breasted bronze 2. Board breasted white 3. Belt &Ville small white.Turkey isthe important poultry species in the tropical countries of the world including Bangladesh for their meat production. The advantages of turkey rearing over other poultry species include lower incidence of the diseases, easy rear system higher market price, lower feeding cost, and low mortality (Asaduzzaman et al., 2017).Turkeyisisthe largest domestic bird, reared intensively and semi-intensively in this country and emerging as a vital source of income of farmers and contribute to the national economy. Experience shows that the climate of Bangladesh is suitable to rear different poultry species. Poultry meat alone contributes 37% of the total meat production in Bangladesh (Begum et al., 2011). Turkey meat may be one of the best options asan alternative protein source for a rapidly growing population of the country.Turkey carcasses contain higher percentages of protein than chicken carcasses (Smith et al.,1990).High profit can be obtained with low investment in a backyard turkey farm. Production of lean meat is another reason for increasing the turkey farming. In one acre of fenced land, 200-250 adult turkey can be reared. Turkey production can be a highly profitable agricultural industry with rising global demand for its products (Yakubu et al., 2013). In addition, Sharma and his co-worker (1997) reported that turkey production was possible under wide range of climatic conditions and were relatively more resistant to some of the common diseases.Kakri stated that the consumption of turkeys and broilers as white meat was rising worldwide and a similar trend also existed in developing countries(2005). , The total production of turkey meat was 5.6 million tons in 2012, which was higher than 5.1 million tons in 2003, a decade earlier (FAOSTAT, 2012). Grimes and his co-worker (2007) stated that turkey is excellent insect’s foragers and that most crops that are troubled by insect population including vegetable crops are candidates for insect control by turkeys.Healthy turkeys will range substantial distances if allowed. Turkeys can use many types of ranges and pastures to flourish. Native ranges can provide a wealth of edible plants and insects for them.

**Objectives:**

1. To know the management system of turkey in Cumilla region of Bangladesh

2. To know the phenotypic difference of turkey population in Cumilla region.

**METHODS AND MATERIALS**

**Study area**

The study area included Burichong, Chandina, and Barura under the Cumilla district of Bangladesh. During our study period, we visited 9 different turkey farm.

**Data collection**

The data were collected during the period from 15 November 2019 to 25 December2019.A pre-designed questionnairewas used for collecting the information on turkey phenotypic traits and their management. Data was collected on various phenotypic parameters such as live weight (LW), shank length(SL), upper shank diameter(USD), lower shank diameter(LSD), drumstick length(DSL), upper wing length(UWL), middle wing length(MWL), lower wing length(LWL), mid wattle breath(MWB), side wattle breath(SWB), wattle length(WL), comb length(CL), upper beak length(UBL), lower beak length(LBL) and housing, feeding, litter materials, marketing.

**Data Analysis**

The live weight of turkey was set as dependent and age was set as an independent variable. The model was analyzed by Microsoft excel-2007 to obtain the model parameters (a and b). Along with the fit statistic coefficient of determination (R2) was also obtained. The estimated value of different traits wascalculated according to Van Arendok (1985).

**Fitting the linear regression In the linear regression equation:**

Y= a + bx

Where:

Y: the value of the traits.

x: lactation number.

a and b: parameters that define the shape of the curve.

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the fit statistic coefficient of determination (R2) was also obtained. The estimated value of different traits wascalculated according to Van Arendok (1985) for comparing the studied values by using age adjustment factor as a live weight adjustment factor.

**Result and Discussion**

**Prospects of turkey farming:**

Turkey is a unique bird which is suitable for rearing in hot humid climatic condition like Bangladesh. But due to unknown reasons, it has not been explored in Bangladesh and other developing countries. In fact, turkeys are adaptable to a wide range of climatic conditions and can be raised successfully almost anywhere in the world if they are well fed and protected against diseases and predators. Asaduzzaman et al., 2017reported that disease frequency and mortality is low in Turkey. For this reason’s turkey is becoming popular gradually in developing countries like in Bangladesh. Anandh et al., 2012 reported that commercial turkey farming is becoming popular in India.

**Low disease prevalence:**

Turkey is more disease resistant in comparison to other poultry species like chicken, duck, and quail. The mortality rate of turkey is very low in comparison to other poultry birds. Sampath, 2012 reported that turkeys are resistant to Marek’s and Infectious bronchitis and commonly encountered with other diseases like mycoplasmosis, fowl cholera, erysipelas, and hemorrhagic enteritis. Farmers mostly do vaccination only for New Castle Disease and Fowl cholera.

**Low feeding cost:**

In fact, feed cost represents two-thirds of the total costs in a poultry production system. Turkeys are good foragers and it could reduce feeding cost. Twenty percent of feed can be substituted with vegetable waste to reduce the cost of feed. However, other poultry species such as geese and turkey can obtain added nutrients from forage because they are better able to digest fiber due to the larger microbial populations in their digestive tracts (Brad et al., 2010).

**Market demand:**

At present turkey, market is limited to some particular customers as an ornamental bird as well as for meat purposes, and its price is higher than other poultry species. Body size is another cause of limited customers. There are a good number of Christian people in Bangladesh who are fond of turkey meat on Christmas day. So, there is a huge opportunity to expand the turkey market in Bangladesh as well as in abroad.

**An alternative source of income and protein:**

While the broiler meat market is facing problems of higher diseases and lower taste, turkey meat could be an alternative for consumers. So, it could be an effective alternative source of protein. Moreover, this bird is quite suitable for uplifting livelihoods of small and marginal farmers as it can be easily reared in free-range and under both intensive and semi-intensive systems with little investment for housing, equipment, and management. It may create a good opportunity for unemployed youths to start farming and earn income. In the context of competitive feeding and management cost, different countries searched such alternative sources for protein. Okoruwa et al., 2006 reported that with the continued rise in the cost of production of cattle, sheep, and goat, which are the primary sources of animal protein in Nigeria, it has become very necessary to explore efficient and less common but potential sources of animal protein for economic viability. Male and female British United Turkey reached, at 16 weeks of age, 14.60 kg and 10.25 kg, respectively (BUT, 2005). Moreover, the turkey has a high dressing percentage that could amount to 87% of slaughter weight (Turkey management guide, 2012).In fact, turkey is a newly introduced poultry species in Bangladesh. Farmers are rearing turkey as an ornamental bird with a limited extent without having prior experience. Mainly interested farmers started turkey farming by importing day-old turkey chicks (Poult) from a neighboring country, India. Its popularity is increasing gradually because of the gamey flavor of the meat with lower fat content. So, it may have a high potential for production and marketing in Bangladesh.

**Reproduction technology:**

From the present study, it was found that none of the farmers used AI technique and even they had not heard about it earlier regarding turkey breeding. In fact, the adult body weight of tom has been increased over time due to advanced researches and becomes too large to achieve natural fertilization. Anthony, 2001 reported that modern White Turkey was developed for rapid growth rate through a selection process, which makes it so different from their wild ancestors that they are unable to mate naturally because of their heavyweight and AI has become necessary. The age of the breeder is important to a factor which affects egg weight, internal and external quality egg, hatching performance and the quality of poult. Anandh et al., 2012 reported that the egg hatchability rate is overall 52.85%. It was reported that as hen age increases, the weight of egg increases and both shell quality and internal egg quality decrease (Erensayın, 2000). In addition to low egg yield, unsatisfactory egg fertility and hatchability constitute a major problem for turkey breeding enterprises (Ozcelik et al., 2009).

**Marketing:**

In our study area, we found that the farmer used to TAKA 200 for selling four eggs. The poult price may vary but commonly TAKA 150-200 (0-15 days) and TAKA 500-700 (2 months) for per young. The price of adult one varies with weight, 300-320 TAKA per kg.

**Live weight of tom:**

The mean with standard error value of live weight for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 3.525, 5.26429, 6.2, 9.05 and 10.4333. In here we observed highest value of 10.4333 for 7 month old tom and lowest value of 3.525 observed for 3 month old tom.

**Shank length of tom:**

The mean with standard error value of shank length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 11.5833, 12.8286, 12.55, 13.55 and 13.1667. In here we observed highest value of 13.1667 for 7 month old tom and lowest value of 11.5833 observed for 3 month old tom.

**Upper shank diameter of tom:**

The mean with standard error value of upper shank diameter for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 5.65, 9.1, 5.5, 6.45 and 6.36667. In here we observed highest value of 6.36667 for 7 month old tom and lowest value of 5.5 observed for 5 month old tom.

**Lower shank diameter of tom:**

The mean with standard error value of lower shank diameter for 3 month, 4 month, 5 month, 6 month and 7 month old tom are4.95 ,5.32857 ,5.05 ,5.6 and 5.83333. In here we observed highest value of 5.83333 for 7 month old tom and lowest value of 4.95 observed for 3 month old tom.

**Upper wing length of tom:**

The mean with standard error value ofupper wing length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are13.01667,13.6429, 13.95, 15 and 15.1333. In here we observed highest value of 15.1333 for 7 month old tom and lowest value of 13.01667 observed for 3 month old tom.

**Middle wing length of tom:**

The mean with standard error value of middle wing length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 12.98333, 13.7286, 14.45, 14.2 and 15.6. In here we observed highest value of 15.6 for 7 month old tom and lowest value of 12.98333observed for 3 month old tom.

**Lower wing length of tom:**

The mean with standard error value of lower wing length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are7.96667, 10.07143, 7.35, 7.1 and 7.86667. In here we observed highest value of 10.07143 for 7 month old tom and lowest value of 7.1 observed for 6 month old tom.

**Drumstick length of tom:**

The mean with standard error value of drumstick length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 16.75, 18.81429, 16.75, 17.15 and 17.86667. In here we observed highest value of 18.81429 for 7 month old tom and lowest value of 16.75 observed for both 3 and 5 month old tom.

**Mid wattle breath of tom:**

The mean with standard error value of mid wattle breath for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 2.45, 4.95714, 4.9, 6.15 and 6.6. In here we observed highest value of 6.6 for 7 month old tom and lowest value of 2.45 observed for 3 month old tom.

**Side wattle breath of tom:**

The mean with standard error value of side wattle breath for 3 month, 4 month, 5 month, 6 month and 7 month old tom are1, 3, 2.1, 3.7 and 3.7333. In here we observed highest value of 3.7333 for 7 month old tom and lowest value of 1observed for 3 month old tom.

**Wattle length of tom:**

The mean with standard error value of wattle length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 9.53333, 16.0714, 14, 17.75 and 18.3333. In here we observed highest value of 18.3333 for 7 month old tom and lowest value of 9.53333observed for 3 month old tom.

**Comb length of tom:**

The mean with standard error value of comb length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 3.18333, 5, 2.35, 6.85 and 3.7333. In here we observed highest value of 6.85 for 6 month old tom and lowest value of 2.35 observed for 5 month old tom.

**Upper beak length of tom:**

The mean with standard error value of upper beak length for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 5.21667, 6.01429, 6.15, 6.45 and 6.46667. In here we observed highest value of 6.46667 for 7 month old tom and lowest value of 5.21667observed for 3 month old tom.

**Lower beak length of tom:**

The mean with standard error value of lower beak lengt for 3 month, 4 month, 5 month, 6 month and 7 month old tom are 4.85, 5.41429, 5.8, 5.9 and 6.06667. In here we observed highest value of 6.06667 for 7 month old tom and lowest value of 4.85observed for 3 month old tom.

**Live weight of tom of hen:**

The mean with standard error value of live weigh for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are2.7, 3.22778, 4.73333, 4.66667, 5.46, 5.92143, 6.11667 and 7.3. In here we observed highest value of 7.3 observed for 12 month old hen and lowest value of 2.7 for 3 month old hen.

**Shank length of tom of hen:**

The mean with standard error value of shank length for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 9.5, 10.32222, 10.1, 9.7, 10.02, 10.8643, 11.0667 and 11.05. In here we observed highest value of 11.0667 for 9 month old hen and lowest value of 9.5observed for 3 month old hen.

**Upper shank diameter of hen:**

The mean with standard error value of upper shank diameter for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 5.02, 6.15556, 5.13333, 5.26667, 5.27, 5.43571, 5.48333 and 5.725. In here we observed highest value of 6.15556 for 4 month old hen and lowest value of 5.02observed for 3 month old hen.

**Lower shank diameter of hen:**

The mean with standard error value of lower shank diameter for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 4.24, 4.97778, 4.66667, 4.56667, 4.83, 4.97857, 5.03333and4.975. In here we observed highest value of 4.97857 for 8 month old hen and lowest value of 4.24observed for 3 month old hen.

**Upper wing length of hen:**

The mean with standard error value of upper wing lengthfor 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 9.8, 11.11111, 10.7333, 9.86667, 10.01, 10.8, 11.15 and 11.05. In here we observed highest value of 11.15 for 9 month old hen and lowest value of 9.8observed for 3 month old hen.

**Middle wing length of hen:**

The mean with standard error value of middle wing length for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 9.86, 11.35556, 11, 10.2, 10.5, 11.1929, 11.5 and 11.375. In here we observed highest value of 11.5 for 9 month old hen and lowest value of 9.86observed for 3 month old hen.

**Lower wing length of hen:**

The mean with standard error value of lower wing length for 3 month, 4 month, 5 month, 6month, 7 month, 8 month, 9 month and 12 month old hen are 6.32, 6.14444, 5.5, 5.03333, 5.28, 5.51429, 5.5 and 5.8. In here we observed highest value of 6.32 for 3 month old hen and lowest value of 5.03333 observed for 6 month old hen.

**Drumstick length of hen:**

The mean with standard error value of drumstick length for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 14,96, 15.35556, 15.4, 14.13333, 14.52, 15.60714, 16.16667 and 16.1. In here we observed highest value of 16.16667 for 9 month old hen and lowest value of 14.13333 observed for 6 month old hen.

**Mid wattle breath of hen:**

The mean with standard error value of mid wattle breath for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 1, 2.87778, 2.43333, 2.83333, 2.67, 2.72857, 3.1 and2.725. In here we observed highest value of 3.1 for 9 month old hen and lowest value of 1observed for 3 month old hen.

**Side wattle breath of hen:**

The mean with standard error value of side wattle breath for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 0.38, 1.88889, 1.3, 1.4, 1.67, 1.48571, 1.85 and 1.3. In here we observed highest value of 1.88889 for 4 month old hen and lowest value of 0.38 observed for 3 month old hen.

**Wattle length of hen:**

The mean with standard error value of wattle length for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old tom are 6.96, 10.7889, 10.1333, 9, 10.35, 11.1571, 11.45 and 12.4. In here we observed highest value of 12.4 for 12 month old hen and lowest value of 6.96 observed for 3 month old hen.

**Comb length of hen:**

The mean with standard error value of comb length for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old tom are 0.92, 1.95556, 1.7, 1.7, 1.98, 1.97143, 1.93333 and 2.925. In here we observed highest value of 1.97143 for 8 month old hen and lowest value of 0.92 observed for 3 month old hen.

**Upper beak length of hen:**

The mean with standard error value of upper beak length for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 4.94, 5.08889, 4.3, 4.46667, 4.61, 4.90714, 4.98 and 6.125. In here we observed highest value of 6.125 for 12 month old hen and lowest value of 4.3 observed for 5 month old hen.

**Lower beak length of hen:**

The mean with standard error value of lower beak length for 3 month, 4 month, 5 month, 6 month, 7 month, 8 month, 9 month and 12 month old hen are 4.68, 4.74444, 3.96667, 4.2, 4.29, 4.54286, 4.66667 and 5.474. In here we observed highest value of 4.74444 for 4 month old hen and lowest value of 3.96667 observed for 5 month old hen.

**Live weight of tom and hen:**

The mean with standard error values of live weight is shown in table 6 and table 8. Average live weight of tom are higher then hen for different age.

**Shank length, upper and lower shankdiameter of tom and hen**:

The mean with standard error values of shank length, upper and lower shank diameter are shown in table 6 and table 8. Average shank length, upper and lower shank diameter of tom are higher then hen for different ages.

**Upper, middle and lower wing length of tom and hen:**

The mean with standard error values of upper, middle and lower wing length of tom and hen are shown in table 6 and table 8.The average upper wing length, middle wing length and lower wing length of tom are higher then hen for different ages..

**Drumstick length of tom and hen:**

The mean with standard error values of drumstick of tom and hen are shown in table 6 and table 8. The average drumstick length of tom are higher the hen for defferent ages.

**Mid wattle breath and side wattle breath of tom and hen :**

The mean with standard error values of mid wattle breath and side wattle breath of tom and hen are shown in table 7 and table 9. Average Mid wattle breath and side wattle breathof tom are higher then hen for defferent ages.

**Wattle length and comb length of tom and hen:**

The mean with standard error values of wattle length and comb length of tom and hen are shown in table 7 and table 9. The average eattle length and comb length of tom are higher then hen for different ages.

**Upper beak length and lower beak length of tom and hen:**

The mean with standard error values of upper beak length and lower beak length of tom and hen are shown in table 7 and table 9. The average Upper beak length and lower beak length of tom are higher then hen for different ages.

**Table 01:** Mean ± standard error of various phenotypic traits in turkey tom

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age | LW | SL | USD | LSD | UWL | MWL | LWL |
| 3 month | 3.525±0.07932 | 11.5833±0.07923 | 5.65±0.05627 | 4.95±0.02236 | 13.01667±0.01667 | 12.98333±0.01667 | 7.96667±0.03333 |
| 4 month | 5.26429±0.2078 | 12.8286±0.09932 | 9.1±0.17728 | 5.32857±0.07781 | 13.6429±0.18369 | 13.7286±0.17003 | 10.07143±0.55665 |
| 5 month | 6.2±0.1 | 12.55±0.15 | 5.5±0.1 | 5.05±0.05 | 13.95±0.05 | 14.45±0.05 | 7.35±0.05 |
| 6 month | 9.05±0.15 | 13.55±0.15 | 6.45±0.05 | 5.6±0.1 | 15±0.1 | 14.2±0.1 | 7.1±0 |
| 7 month | 10.4333±0.37118 | 13.1667±1.24544 | 6.36667±0.03333 | 5.83333±0.03333 | 15.1333±0.08819 | 15.6±0.15275 | 7.86667±0.03333 |

Legends: LW: live weight; SL: shank length; USD: upper shank diameter; LSD: lower shank diameter;UWL: upper wing length; MWL: middle wing length; LWL: lower wing length.

**Table 02:** Mean ± standard error of various phenotypic traits in turkey tom

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age  | DSL | MWB | SWB | WL | CL | UBL | LBL |
| 3 month | 16.75±0.13354 | 2.45±0.04282 | 1±0 | 9.53333±0.02108 | 3.18333±0.04014 | 5.216670.01667 | 4.850.02236 |
| 4 month | 18.81429±0.26853 | 4.95714±0.06117 | 3±0 | 16.0714±0.08081 | 5±0.05345 | 6.01429±0.04041 | 5.41429±0.02608 |
| 5 month | 16.75±0.21213 | 4.9±0.2 | 2.1±0 | 14±0 | 2.35±0.15 | 6.15±0.05 | 5.8±0 |
| 6 month | 17.15±0.05 | 6.15±0.05 | 3.7±0 | 17.75±0.05 | 6.85±0.05 | 6.45±0.05 | 5.9±0.1 |
| 7 month | 17.86667±0.08819 | 6.6±0.1 | 3.73333±0.03333 | 18.3333±0.03333 | 3.73333±0.06667 | 6.46667±0.03333 | 6.06667±0.03333 |

Legends: DSL: drumstick length; MWB: mid wattle breath; SWB: side wattle breath; WL: wattle length; CL: comb length; UBL: upper beak length; LBL: lower beak length

**Table 03:** Mean ± standard error of various phenotypic traits in turkey hen

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age | LW | SL | USD | LSD | UWL | MWL | LWL |
| 3 month | 2.7±0.09636 | 9.5±0.05345 | 5.02±0.03162 | 4.24±0.0828 | 9.8±0.07559 | 9.86±0.07368 | 6.32±0.09411 |
| 4 month | 3.22778±0.1906 | 10.32222±0.16979 | 6.15556±0.3154 | 4.97778±0.06827 | 11.11111±0.27409 | 11.35556±0.22368 | 6.14444±0.28872 |
| 5 month | 4.73333±0.08819 | 10.1±0.1 | 5.13333±0.03333 | 4.66667±0.03333 | 10.7333±0.03333 | 11±0 | 5.5±0 |
| 6 month | 4.66667±0.08819 | 9.7±0.05774 | 5.26667±0.03333 | 4.56667±0.33333 | 9.86667±0.03333 | 10.2±0.05774 | 5.03333±0.03333 |
| 7 month | 5.46±0.14314 | 10.02±0.10625 | 5.27±0.0423 | 4.83±0.04955 | 10.01±0.06904 | 10.5±0.07454 | 5.28±0.05333 |
| 8 month | 5.92143±0.10751 | 10.8643±0.03867 | 5.43571±0.03075 | 4.97857±0.04084 | 10.80.08452 | 11.19290.04742 | 5.51429±0.0312 |
| 9 month | 6.11667±0.21972 | 11.0667±0.03333 | 5.48333±0.07031 | 5.03333±0.07149 | 11.15±0.10567 | 11.5±0.12383 | 5.5±0.06325 |
| 12 month | 7.3±0.26141 | 11.050.05 | 5.725±0.06291 | 4.975±0.025 | 11.05±0.02887 | 11.375±0.04787 | 5.8±04082 |

Legends: LW: live weight; SL: shank length; USD: upper shank diameter; LSD: lower shank diameter; UWL: upper wing length; MWL: middle wing length; LWL: lower wing length.

**Table 04**: Mean ± standard error of various phenotypic traits in turkey hen

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age | DSL | MWB | SWB | WL  | CL | UBL | LBL |
| 3 month | 14.96±0.09856 | 1±0 | 0.38±0.0169 | 6.96±0.03381 | 0.92±0.0414 | 4.940.03381 | 4.680.0169 |
| 4 month | 15.35556±0.28437 | 2.87778±0.07597 | 1.88889±0.06758 | 10.78890.22512 | 1.955560.03379 | 5.08889±0.03514 | 4.74444±0.0294 |
| 5 month | 15.40.05773 | 2.43333±0.08819 | 1.3±0 | 10.1333±0.08819 | 1.7±0 | 4.3±0 | 3.96667±o.03333 |
| 6 month | 14.13333±0.08819 | 2.83333±0.06667 | 1.4±0 | 9±0.05774 | 1.7±0 | 4.46667±0.03333 | 4.2±0 |
| 7 month | 14.52±0.09285 | 2.67±0.10755 | 1.67±0.20002 | 10.35±0.05426 | 1.98±0.02 | 4.61±0.02333 | 4.29±0.02333 |
| 8 month | 15.60714±0.13196 | 2.72857±0.0759 | 1.48571±0.09542 | 11.1571±0.07538 | 1.97143±0.02206 | 4.90714±0.03847 | 4.54286±0.03882 |
| 9 month | 16.16667±0.13080 | 3.1±0.04472 | 1.85±0.04282 | 11.45±0.07188 | 1.93333±0.04944 | 4.98±0.07303 | 4.66667±0.08433 |
| 12 month | 16.1±0.08164 | 2.725±0.06292 | 1.3±0.04082 | 12.4±0.24833 | 2.925±0.025 | 6.125±0.025 | 5.474±0.025 |

Legends: DSL: drumstick length; MWB: mid wattle breath; SWB: side wattle breath; WL: wattle length; CL: comb length; UBL: upper beak length; LBL: lower beak leng**3.8 Performance of live weight against age after fitting regression equation:**

**Table 05:** Linear regression between age and weight of tom

|  |  |
| --- | --- |
| Age (month) | Weight (kg.) |
| 3 | 3.525 |
| 4  | 5.26429 |
| 5 | 6.2 |
| 6 | 9.05 |
| 7 | 10.4333 |

**Table 06**: Linear regression between age and weight of the hen

|  |  |
| --- | --- |
| Age (month) | Weight (kg.) |
| 3  | 2.7 |
| 4 | 3.22778 |
| 5 | 4.73333 |
| 6 | 4.66667 |
| 7 | 5.46 |
| 8 | 5.92142 |
| 9 | 6.11667 |
| 12 | 7.3 |



**Figure 1:** Curve after fitting linear regression **Figure 2:** Curve after fitting the linear equation for Tom.the regressionequation for Hen.

The values of the linear regression equation of live weight are shown in table 9 for tom and table 10 for the hen. The curve shape of the live weight of tom and hen after fitting the regression equation hasshown in figure 1 and figure 2. In there R2 value of tom is 0.9786 which value is strong and R2 value of hen is 0.9375 which value is also strong. Although both valuesis strong but the value of R2 of tom are strongerthen hen.

**3.9 Profitability of backyard turkey farm:**

**Table 07:**Feed cost for 10 turkeys until marketing at the age of 8 months or 240 days are given below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time  | Feed  | Amount | Cost (per kg=30 taka) | Total TAKA |
| 0 day to 15 days | Pellet feed/ nourish layer grower | 2 kg | 2×30 | 60 |
| 16 days to 30 days | Pellet feed/ nourish layer grower | 3kg | 3×30 | 90 |
| 31 days to 40 days | Pellet feed/ nourish layer grower | 4kg | 4×30 | 120 |
| 41 days to 50 days | Pellet feed/ nourish layer grower | 6kg | 6×30 | 180 |
| 51 days to 60 days | Pellet feed/ nourish layer grower | 8kg | 8×30 | 240 |
| 61 days to 280 days  | Pellet feed/ nourish layer grower/ nourish layer layer | 250kg | 250×30 | 7500 |
| Total cost |  |  |  | 8190 |

Vegetable cost around 1500 taka.

**Table 08:**Total rearing cost:

|  |  |  |
| --- | --- | --- |
| Items  | Cost  | Total taka |
| Poult cost  | 10×200 | 2000 |
| Housing cost | 2000 | 2000 |
| Pellet feed cost | 8190 | 8190 |
| Vegetable feed cost | 1500 | 1500 |

|  |  |  |
| --- | --- | --- |
| Vaccination and medication | 500 | 500 |
| Others  | 500 | 500 |
| Total cost |  | 14690 |

**3.10 Income:**

Price of per kg turkey is300 to 320 TAKA

At 8 month age average body weight gain are 6 kg per bird.

Total body weight for 10 bird 10×6=60 kg

Total turkey selling price = 60×300 =18000

**Table 09:** Calculation of net return:

|  |  |
| --- | --- |
| Item | 10 turkey for 8 months (meat purpose) |
| Return from selling turkey | 18000  |
| Total income | 18000 |
| Total cost | 14690 |
| Net return | 3310 |

**CONCLUSION**

There is considerable scope for turkey rearing in cumilla region, as turkey can be reared in free-range or semi-intensive systems especially in rural areas for economic enhancement of landless laborers, marginal and small farmers. The free-range turkey rearing method requires low investment in facilities and equipment, and it is a viable and sustainable bird both for the backyard and commercial venture froman economic point of view. Turkeys are suitable birds for the tropical climate of the Indian sub-continent. So, to improve the turkey production, vigorous public extension service, training for farmers, opening of different avenues for research on turkey and identifying marketing strategies, are immediately needed in Bangladesh.It can be concluded that this study indicates some important phenotypic traits of turkey which can be used by the farmers, researchers and policymakers for future improvement of turkey in this particular area as well as in Bangladesh.

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**The Author of August, 2020**

**Biography**

This is Md. Nazmul Hoque Peas, son of Late. Md. Zaher Mia and Mosa. Nasima Akter. I am from Cumilla District. I completed S.S.C in 2010 from Shankuchail High School, Burichong, Cumilla and H.S.C in 2012 from Ispahani Public School and College, Cumilla. I got admitted into the Doctor of Veterinary Medicine (DVM) degree under Chattogram Veterinary and Animal Sciences University in the 2013-2014 session. As an upcoming Veterinarian, I would like to dedicate therest of life tothe welfare of animals. I am keen to be a field veterinarian as well as a skilled practitioner.

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**Appendix**

**Table 01:** Questionnaire

|  |  |
| --- | --- |
| Sl. No. | Data |
| 01 | Name of the Farmer |
| 02 | Occupation |
| 03 | Address |
| 04 | Mobile no: |
| 05 | Farm size |
| 06 | Breed |
| 07 | Age |
| 08 | No. of Tom |
| 09 | No. of Poult |
| 10 | No. of Hen |
| 11 | Materials use |
| 12 | Types of housing |
| 13 | Management practices |
| 14 | Feed supply |
| 15 | Health status |
| 16 | Name of Disease |
| 17 | Vaccine |
| 18 | Marketing System |
| 19 | Income |
| 20 | Investment |
| 21 | Feed cost |
| 22 | Housing cost |
| 23 | Others cost |
| 24 | Profit |

**Number of turkey and farmers name:**

**Table 02:** Number of turkey and turkey farm:

|  |  |  |
| --- | --- | --- |
| Farms  | Name of farmer | Number of turkeys |
| F1 | Taju  | 18 |
| F2 | Kamal  | 4 |
| F3 | Ridoy  | 7  |
| F4 | Ariful Islam | 5 |
| F5 | Siddik  | 6 |
| F6 | Sujon  | 10 |
| F7 | Abdur Razzak | 6 |
| F8 | Arif  | 8 |
| F9 | Zaher Mia | 12 |
|  | Total | 76 |