

Research article

An economic comparison of performance and profitability between two meat types birds: Brown cockerel and Sonali

Sumy, M. C. ^{1*}, Ahsan, M. M. ², Gupta, M. D. ³

¹Department of Agricultural Economics and Social Sciences, Chittagong Veterinary and Animal Sciences University (CVASU), Chittagong-4202, Bangladesh.

²Department of Microbiology and Hygiene, Bangladesh Agricultural University (BAU), Mymensingh-2202, Bangladesh,

³Department of Microbiology and Veterinary Public Health, Chittagong Veterinary and Animal Sciences University (CVASU), Chittagong-4202, Bangladesh.

ARTICLE INFO

Article history :

Received 26 June 2015

Revised 2 July 2015

Accepted 6 July 2015

Keywords :

Benefit cost ratio, Brown cockerel
Feed conversion ration
profitability, Sonali.

ABSTRACT

The study was conducted to compare the production and profitability of Brown cockerel and Sonali for meat purposes. A total of 42 poultry farms from Savar Upazilla in Dhaka district were randomly selected for the study. The data were collected from a structured questionnaire about these two types of birds at eight weeks of age. The finding of the study revealed that the FCR of Brown cockerel (2.49 ± 0.024) was significantly lower than Sonali (2.77 ± 0.101). The production cost per bird was found almost similar between Brown cockerel and Sonali. But the total return was significantly higher ($p < 0.05$) in Brown cockerel compared to Sonali. Benefit cost ratio was also higher in Brown cockerel (1.22) than Sonali (1.10) in the study area.

Corresponding Author :

Email: sumy315bd@yahoo.com

Tel: 01712560028

To cite this paper : Sumy, M. C., Ahsan, M. M., Gupta, M. D. 2015. An economic comparison of performance and profitability between two meat types birds: Brown cockerel and Sonali Bangladesh Journal of Veterinary and Animal Sciences, 3 (49-53)

INTRODUCTION

Poultry meat is the fastest growing component of global meat production, consumption and trade. In Bangladesh poultry is a substantial contributor to food supply and poultry industry is one of the rapidly developing industries in the livestock sector of the country. According to DLS (2005) meat requirement is 120 gm/day/head and 6.26 metric tons/year. But our achievement is only 20 gm/day/head and 1.04 million metric tons/year. So we can see that the production cannot cope with the high demand by our native chicken. Given this context, poultry raising particularly Brown cockerel and Sonali appears to be a good way of meeting the protein gap.

Now-a-days in Bangladesh color-feathered Brown cockerel (male birds of different commercial layer strain which are separated in the hatchery at day old by sexing) and Sonali (Fayoumi ♀ x Rhode Island Red ♂) are rearing for meat purpose like commercial broiler (strain). Sonali is mostly chosen for their looking appearance like Deshi (Local) chicken (Akhtar-Uz-Zaman, 2002). Brown cockerel is mostly popular for roasting purpose. In urban or rural areas in Bangladesh, any festival of either religion or social origin is unimaginable without roasted chicken. People think that it is a great dishonor not to serve roast chicken at a festival (Samsuddoha and Sohel, 2008).

The scope for cockerels as a source of poultry meat is high because many consumers prefer cockerel equally to that of indigenous chicken and many people consider that it is tastier than the broiler meat. Sarkar et al., (2008) stated that utilization of cockerels through smallholder family poultry farming helps control environment pollution, increase nutrition, generates income and self-employment in the rural community. Consumers' choice, lower chick price, lower mortality and morbidity, lower management cost, lower initial investment, better market demand, low abdominal fat, family labor utilization and easy management are the strategic advantages for cockerel rearing.

Sonali (Fayoumi ♀ x Rhode Island Red ♂) has been taking place besides the indigenous hens due to their adaptability and acceptability in the climatic conditions of Bangladesh (Anisuzzaman, 1988). Such crossbred chicken has already been proved worth in production performances in semi-scavenging system under village condition of Bangladesh (Amber et al. 1999). Considering the environmental factors e.g., rainfall, housing and economic traits as survivability, rapid growth of male chicks as well as female's egg production, this crossbred was recommended to rear for small-holder poultry farming in Bangladesh (Amber, 2000). Therefore, farming with this crossbred chicken by the smallholder village poultry farmers in Bangladesh may ensure sustainable poultry production in the country as well as to improve the economic and nutritional status of the people.

A comparative study between those birds with regard to their productivity and profitability at eight weeks of age groups has so far received little attention. So, the present study was designed to compare the growth rate, feed intake, feed conversion efficiency, comparative cost, return and profitability between Brown cockerel and Sonali chick for the meat purpose. The insight study on the relative profitability of these two meat types of birds may open a new business route for poultry industry in Bangladesh.

MATERIALS AND METHODS

A total of 42 poultry farms were randomly selected from Savar Upazilla in Dhaka district of Bangladesh for collecting data through survey among which 21 were Brown cockerel farms and rest of the farms were for Sonali. Data were collected from a structured questionnaire for both types of chickens at eight weeks of age. A direct visit was made to the farmer's

house by the data collector to gather information; interviews were done according to the convenience of the respondents. If any item was overlooked and misunderstood or found contradictory, this was corrected through re-interviewing on spot.

Estimation of Cost and Returns

The following deterministic model using Microsoft excel was used to estimate the profit of the two meat types birds:

$$\text{Profit } P_C (B_S + B_C) + \text{TVBP} - \sum P_{X_i} X_i - \text{TFC}$$

Where, P_C =Price/ unit

B_S =Number of bird sold

B_C =Number of bird consumed by the farm family

TVBP=Total value of by-products

P_{X_i} =Per unit price of i^{th} variable input

X_i = Quantity of i^{th} input ($i = 1, 2, 3, \dots, n$)

TFC=Total fixed cost.

Valuation of Return Items

There was no formal market for excreta and litter and bags. So the actual average price received by the farmers was used to estimate the total return from these items. The total return on individual items was calculated on the basis of the number of birds sold multiplied by the average price of the concerned product. Birds were sold Brown cockerel Tk.175 and Sonali Tk.170 per kg.

Variable Costs: Costs of different inputs which are needed for operating a farm are described below:

Labour cost: Labour cost was calculated by using the prevailing wage rate (without food). The labour estimated man-days were multiplied by the daily wage rate of respective area to calculate the labour cost per batch. Labour cost varied from Tk.230 to Tk.250 per man-day in study area.

Feed costs: Feed costs included expenses associated with buying feed ingredients or processed feeds and other vitamins and premix. The feed cost per batch was calculated by multiplying the average amount of feed by the price per unit paid by the farmers in the study area.

Chick cost: The cost of DOC refers to the cost at which DOC is purchased by the farmers from suppliers. The DOC was varied at the rate of Tk.15 to Tk.20 per chick for both types of birds in the study area.

Fixed Cost: Cost on poultry houses and equipment were included under fixed cost.

Cost of Housing: The cost of housing was calculated by taking into account the depreciation cost and interest on value of housing and maintenance

cost. The production period of different components were considered in computing costs of depreciation and interest on capital invested by the concerned participants.

Cost of Equipment: In this study, cost of equipment was expressed as equipment cost, which was calculated by taking into accounts the depreciation cost and interest on value of equipment.

Statistical analysis

The collected data were edited and calculated as percentages by using Microsoft EXCEL. Data were analysed by using the statistical analytical software (SAS 2000). To estimate the mean with standard error of all the parameters.

The mean differences were compared using least significant difference (LSD) (Steel et al 1997) at 5% level of significance.

RESULTS AND DISCUSSION

Flock Size

The flock size of Brown cockerel and Sonali were varied on small scale and medium scale farms however there were no large scale farms for this two meat types of birds. It may be due to absence of poultry meat processing industry and lack of investing tendency of poultry industrialist in commercial meat production No significant variation was observed in flock size for Brown cockerel and Sonali bird in the study area (Table 1).

Table.1 Production performances of two birds in the study area:

Parameters ²	Brown cockerel ² (Mean± Standard deviation) ²	Sonali (Mean± Standard deviation) ²	Level of significance
Flock Size ²	1600±699.29 ²	2057±1102.53 ²	NS
Total feed intake (g/ bird) ²	1904.52±129.27 ²	1911.91±102.84 ²	NS
Body weight gain (g/bird) ²	763.81±36.88 ²	688.81±102.84 ²	NS
FCR ²	2.49±0.024 ²	2.78±0.10 ²	*

* Significant difference (p<0.05); NS= Non-significant.

Body weight gain

Body weight gain was found lower in Sonali than Brown cockerel at eight weeks of age (Table 1). Azharul et al. (2005) found 1001g live weight gain at 56 days old in Sonali (RIR×Fayoumi) chicken. Roy et al. (2006), investigated the productive performance of cockerels to different target weights. They found the weight gain of about 500, 750 and 1000g at 42, 53 and 63 days for cockerels and 850, 1000 and 1250g at 63, 77 and 90 days for crossbred birds , respectively. Whereas, Chowdhury (2003) conducted an experiment with Sonali chickens and reported 750, 1000 and 1250g at 98, 126 and 147 days, respectively. Khawaja et al. (2012) reported the body weight gain of crossbred (Sonali) chicken is 491.52 g for Fayoumi male x RIR female and 462.56 g for RIR male x Fayoumi female at eight weeks of age.

(Table 1). Sarkar *et al.* (2008) found the feed consumption and FCR of cockerels against 1000g weight group were 2348.9g and 2.30, respectively. On the other hand, Roy et al. (2006) reported feed intake was 2321.7g and FCR of cockerels 2.40 against target weight of 1000g. Mamun (2003) found a FCR value of 2.60 at 56 days for cockerels. The results of these studies are in agreement with the current study.

In contrast, feed consumption and FCR of Sonali chickens of this current study are not in agreement with the results of Chowdhury (2003), whose findings were 5.81, 6.80, 6.26 for weight groups of 750, 1000 and 1250g respectively. The FCR value was close to Rahman et al. (2004), who found 2.9 and 3.1 at 56 and 84 days, respectively.

Feed intake and Feed Conversion Ratio (FCR)

No significant variation was observed in feed intake between Brown cockerel and Sonali chicken. Feed Conversion Ratio (FCR) of Brown cockerel was significantly lower than Sonali at eight weeks of age

Cost per bird in the study area

Fixed cost

There were no significant differences in fixed cost between two types of chickens (Table 2). Because these two types of birds(brown cockerel and Sonali)

were reared in same type of house and utensils, even in same shade rotation wise according to the season, market demand, availability of chicks and owner's capability.

Variables cost

Per bird feed cost and chick cost were almost similar in Brown cockerel and Sonali. Other variables cost (medicine, labor, litter, electricity, water & miscellaneous) found lower in Sonali than Brown cockerel (Table 2)

Table 2. Comparative analysis of per bird production cost and profitability between two birds in the study area

Item wise production cost	Brown cockerel (Mean±SD)	Sonali (Mean±SD)	Level of significance
Fixed cost (Housing & Instruments)	12.67±1.34	12.10±1.48	NS
Chick cost	16.74±4.02	16.04±1.92	NS
Feed cost	57.14±3.88	57.41±3.15	NS
Other variables cost (Medicine, labour, litter, electricity, water & miscellaneous)	22.79±1.59	20.79±1.86	NS
Total production cost (Tk.)	110.14±4.62	106.29±3.31	NS
Return from Bird (Tk.)	133.833±6.46	117.10±3.97	*
Net Profit (Tk.)	23.70±4.12	10.81±3.13	*
BCR	1.22±1.40	1.10±1.20	NS

* Significant difference ($p < 0.05$); NS= Non-significant

Total production cost

Although no significant variation was observed in total production cost per bird, it was higher in Brown cockerel than in Sonali (Table.2). Raihan and Mahmud (2008) reported by sample survey at Gazipur district that production cost per kg crossbred poultry meat was Tk. 63.10 which was TK. 47.50 and Tk. 28.00 before five years and ten years back, respectively.

Total return

Total return was significantly higher ($p < 0.05$) in brown cockerel compared to Sonali (Table 2). It might be due to sale price per kg which was higher in Brown cockerel (Tk.175) than Sonali (Tk.170). Frands Dolberg (2008) stated Brown cockerels have high demand for making roast in any food festival because of high, palatability, meat texture and flavor and Sonali has a high demand in market as a local chicken with associated premium price in Bangladesh

Profit

A significant ($P < 0.05$) difference of profit per bird was found between Brown cockerel and Sonali (Table 2). Per bird profit was higher in Brown cockerel than Sonali. Sarkar et al. (2008) found profits from cockerel were 21.78, 21.07 and 21.63 Tk/kg live bird for target

weight of 850, 1000 and 1250g, respectively. This result was close to the data reported by Roy et al. (2006), who found profit (Tk/ kg live birds) as Tk. 19.35 and Tk. 22.28 from target weight group of 750 and 1000g, respectively. Sarkar et al. (2008) also found profits (Tk/kg live bird) from cross-bred were Tk. 8.43 and 1.88 for target weight group of 850 and 1000g, respectively. It was evident that profitability decreases with the increase of rearing time. The findings of our present study are also consistent with the results of the above studies for both types of birds.

Benefit Cost Ratio (BCR)

The Benefit Cost Ratio (BCR) was found higher in brown cockerel than Sonali (Table 2). It means that if a farmer invests Tk.1 for each bird, he/she would get return of Tk.1.22 from Brown cockerel and Tk. 1.10 from Sonali. The value of BCR is found greater than 1 for all types of chickens. So, those types of Birds (Brown cockerel and Sonali) farming are profitable. But Brown cockerel farming is more profitable than Sonali.

CONCLUSION

Based on the results of the current study, it could be concluded that rearing of Brown cockerel was superior to Sonali for its growth rate, FCR and body weight gain.

Body weight gain was found lower in Sonali than Brown cockerel during eight weeks of age. Sale price of per kg meat of Brown cockerel was also higher than Sonali for their meat texture, flavor, feathered color and roasting demand. According to the BCR, these two types of birds were found profitable in the study area but rearing of Brown cockerel was more profitable than Sonali. Future research on genotypes of these birds may be useful for the producers of such type of poultry farmers.

ACKNOWLEDGEMENTS

The authors would like to thank, Upazilla Livestock Officer (ULO), Savar, Dhaka and all the field staffs of Savar Upazilla Livestock Office for their kind help and assistance in conducting this research work and preparing the manuscript.

REFERENCES

- Akhtar-Uz-Zaman, M. 2002. Egg production performance of different breed/breed combinations of chicken in semi scavenging system under PLDP. M.Sc. thesis, Department of Animal Breeding and Genetics, Danish Institute of Agricultural Sciences, Foulum, Denmark. pp 4-5.
- Anisuzzaman, M. 1988. A study on growth rate, feed efficiency and livability of Fayoumi chicken under Bangladesh condition. MS Thesis, Dept. of Poult. Sci. Faculty of Animal Husbandry, Bangladesh Agricultural University, Mymensingh.
- Azharul, I. M., Ranvig, H. and Howlider, M. A. R. 2005. Comparison of growth rate and meat yield characteristics of cockerels between Fayoumi and Sonali under village conditions in Bangladesh. Livestock Research for Rural Development, pp17. <http://www.lrrd.org/lrrd17/2/azha17021.htm>
- Amber, M. A. J., Bhuiyan, A. K. F. H., Huque, M. A. and Amin, M. R. 1999. Ranking of some pure and cross-bred chicken using scoring indices. Indian J. Poult Sci., 34(2): 140-146.
- Amber, M. A. J. 2000. Rural Poultry Breeding. Guide for training of trainers (4th edition), PLDP, Bangladesh.
- Chowdhury, S. D. 2003. Development of least cost feed formulae to improve productivity of semi-scavenging poultry birds. Final Report, Participatory Livestock Development Project, DANIDA. Dept. of Poult. Sci., Bangladesh Agricultural University, Mymensingh.
- Dolberg, F. 2008. Poultry sector country review: Bangladesh, Prepared for FAO Animal Production and Health Division, Emergency Centre for Transboundary Animal Diseases; Socioeconomics, Production and Biodiversity Unit, FAO of the UN, Rome, Italy. pp 34-35.
- DLS (Department of Livestock Services). 2005. Report on parent stock import.
- Khawaja, T., Khan, S. H., Mukhtar, N. and Parveen, A. 2012. Comparative study of growth performance, meat quality and haematological parameters of Fayoumi, Rhode Island Red and their reciprocal crossbred chickens. Italian Journal of Animal Science, Vol 11, no.2.
- Mamun, F. A. 2003. A comparative study on the performance of cockerels of two different laying strains under farm condition. M. S. Thesis, Dept. of Poult. Sci. Faculty of Animal Husbandry, Bangladesh Agricultural University, Mymensingh.
- Rahman, M. M., Baqui, M. A. and Howlider, M. A. R. 2004. Growth performance and meat yield of reciprocal crosses of RIR and Fayoumi chicken under local condition of Bangladesh. Bangladesh vet. J., 21(1): 45-51.
- Raihan, S. and Mahmud, N. 2008. Trade and poverty linkages: A Case Study of The Poultry Industry In Bangladesh, University of Dhaka, Bangladesh, CUTS CITEE Working Paper, pp 1-2.
- Roy, K. R., Chowdhury, S. D., Sultana, N., Moshad, M. A. A. and Hasan, M. N. 2006. Production potentiality and economics of rearing cockerels from a commercial layer strain. Bangladesh. vet. J., 23(2): 83-87.
- Sarkar, P. K., Chowdhury, S. D., Kabir, M. H. and Sarker, P. K. 2008. Comparative study on the productivity and profitability of commercial broiler, cockerel of a layer strain and cross-bred (RIR ♀ × fayoumi ♂) chicks. Bang. J. Anim. Sci. 2008, 37(2) : 89 - 98.
- Shamsuddoha, M. and Sohel, M. H. 2008. Problems and Prospects of Poultry Industry in Bangladesh: A Study on Some Selected Areas [Online]. University of Chittagong, Bangladesh. pp 2-3. <http://ssrn.com/abstract=1295343>.
- SAS 2000 User's Guide. Statistics. 8th ed. Cary (NC): SAS Institute Inc.
- Steel, R. G. D., Torrie, J. H. and Dickey, D. A. 1997. Principles and procedure of statistics- A biometrical approach. 3rd ed. Mc Graw-Hill Co., Inc., New York and London, pp 139-177.