

# Performance and Profitability of meat type Sonali Chicken in the selected area of Ishwardi Upazilla

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## Abstract

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Farm-wise productivity and mortality of Sonali chickens in selected poultry farms from Ishwardi Upazillas of Pabna District during February 2022 to April 2022 were assessed. According to the findings, farm 1 produced 2440 marketable live birds and farm 2, farm3, farm4, farm5 and farm 6 produced 3130, 3877, 1950, 2445 and 2140 marketable live birds, respectively. Mortality was documented in the following order: farm 3 > farm 6 > farm 4 > farm 1 > farm5 > farm 2. Birds reared in smaller farms consumed greater amount of feed compared to those reared in larger farms. As for the farm-level variances in profitability components, the profitability components of large farms were much higher than those of medium and small farms. For the country's commercial poultry industry, the current findings on Sonali chicken farming in Ishwardi Upazilla are fairly optimistic in terms of productivity, profitability, and long-term viability.

**Keywords:** Performance, Sonali chickens, Farm size, Benefit cost ratio, profitability.



## **Chapter- 1**

### **Introduction**

Sonali is a crossbred chicken (*Gallus domesticus* L.) created from a cross between a Rhode Island Red (RIR) cock and a Fayoumi hen that looks and tastes like the local and unremarkable Deshi chickens (meaning indigenous). It was first introduced in Bangladesh's northern regions between 1996 and 2000, causing millions of rural women have job opportunities (FAO, 2015). According to a recent survey, Sonali chicken consumption jumped to 45 percent in July 2019 from 20 percent in July 2018 (Hasan, 2019). So, this farming is increasing day by day to meet the increased demand of Sonali. Sonali can be raised intensively or semi-intensively, making it more popular in rural areas.

Farm size, bird age at sale, rearing seasons, and mortality are all connected with productivity in terms of the number of live and marketable birds in the meat-producing, i.e., broiler commercial chicken operation. According to previous studies, the size of a chicken farm has a significant impact on its production, profitability, and long-term viability (Zimmerman et al., 2006; EI-Tahawy et al., 2017). Fecundity, fertility, hatchability, and thus the overall output of chickens are all affected by bird age (Zabudskii et al., 2006).

Several studies (Haque et al., 2012, Uddin et al., 2014, FAO, 2015) and the NEA Report (NEA, 2020) have collected and examined data on the productivity of Sonali chickens (*Gallus domesticus* L.) in various locations of Bangladesh. Previous researchers in Bangladesh researched and analyzed the profitability of numerous poultry birds, including Sonali, Cobb 500, Fayoumi, and RIR, in various districts, and found that Sonali has the highest egg production, lowest mortality, and maximum profit per hen (Islam et al., 2012; Sumy et al., 2014; Modak et al., 2019).

The purpose of this study was to see how farm size and bird age affected the production and profitability of crossbred Sonali chickens collected from six poultry farms in Pabna

District's Ishwardi Upazillas. The findings will aid in determining the feasibility and long-term viability of Sonali chicken farming in the study region.

The specific objective of the study:

- To study the production and profitability of Sonali chickens according to farm size and bird age

## Chapter-2

### Materials and Methods

#### 2.1: Study period and study population

The study was carried out for the period of 3 months from February 2022 to April 2022 at Pabna district. Six Sonali farms from Ishwardi Upazilla and Dashuria Union were selected for the study to evaluate performance and profitability of Sonali chickens.

#### 2.2: Study Area

Six poultry farms of Ishwardi Upazilla, where to, two farms in Umirpur near to Upazilla livestock office and Veterinary Hospital, two in Ishwardi, one in Kalikapur and one in kharjani under Dashuria union that reared cross breed Sonali chickens (origin from Fayoumi Hen  $\times$  Rhode Island Red cock), were selected for collecting data for a period of three months from February 2022 to April 2022

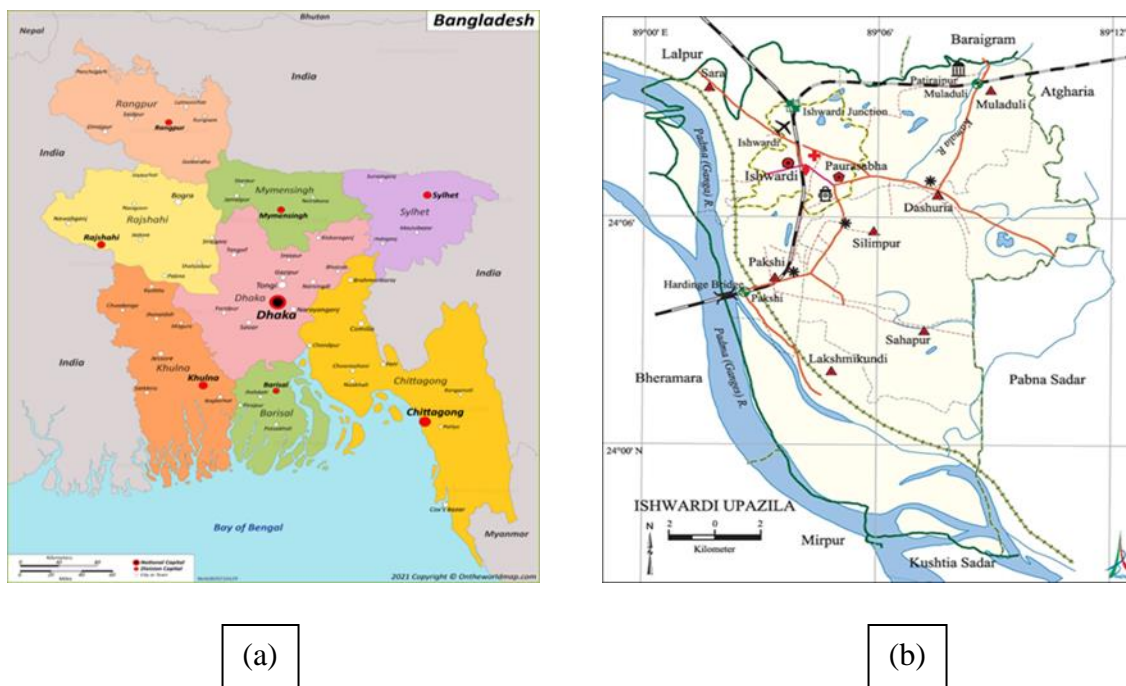


Fig 2.1: Geographical distribution of data collection site (a) Map of Bangladesh: (b) Map of Ishwardi Upazilla in Pabna district



### **2.3: Data Collection**

Total 11 farms were visited of which 6 were Sonali farms, 3 were Broiler farms and 2 were Layer farms. Here, Sonali is a cross breed chicken on the other side Broiler and Layer are strain. So, Sonali farming was emphasized for the study.

Data were collected through a structured questionnaire by asking question to the farmer. Production data such as meat production and management data such as housing, feeding, deworming, vaccination etc. were gathered from direct observation and information that were obtained through the questionnaire that was used during data collection.

### **2.4: Statistical analysis**

The obtained data was stored in Excel-2007 and descriptive statistics (means, standard deviation, standard error) were calculated to compare the different variables.

#### **2.4.1: Estimate of productivity and mortality**

The number of marketable birds per farm was used to determine the productivity of Sonali chicken farms in the study area. For measuring mortality (percent) per 100-day-old chicks (DOCs), the number of dead birds per farm was recorded.

#### **2.4.2: Estimate of economic efficiency parameters**

Bird age at sale (days), food consumption (g) per bird per day (FCBD), and live weight (LW) in gm are all important EEP that contribute to the profitability of the farms under consideration.

#### **2.4.3: Estimate of benefit cost ratio (BCR)**

Calculate BCR, Day old chick (DOC) price, gross cost (GC), and gross return (GR) per bird to estimate benefit cost ratio. All DOCs, feed, water, electricity, labor, disinfectants, antibiotics, and vaccines were included in the GC. The GR, on the other hand, includes all proceeds from the sale of excreta, and live birds. Finally, for each farm size, BCR values per bird were determined using the formula:  $GR \div GC$ .

#### **2.4.4: Estimate of profitability components**

During the study period, components such as average GC/flock/farm, GR/flock/farm, and net profit (NP)/flock/farm were calculated for two farm sizes. The formula  $GR/flock - GC/flock$  was used to determine farm-level NP/flock.

## Chapter-3

### Result and discussion

#### 3.1: General description of the farm:

Table 3.1 shows that four medium size farm range 1000-2999 whose mean birds' production is  $2300 \pm 122.4745$  and two large size farm range  $>3000$  whose mean birds' production is  $3600 \pm 282.8427$ , respectively.

**Table 3.1: Analysis of mean Sonali production according to farm size**

Farm size	No. birds produced (Mean $\pm$ SE)	Farm No.
Small (<1000)	0	0
Medium (1000-2999)	$2300 \pm 122.4745$	4
large (>3000)	$3600 \pm 282.8427$	2

#### 3.2: Common management practices in studied Sonali farms:

Common management practices in Sonali farm under studied have been shown in table 3.2

**Table 3.2: Management practices of the selected Sonali farm:**

Variables	Categories	No of Farm	Percentage
Floor	Concrete	6	100
	Muddy	0	0
Roof	Iron sheets	2	33.33
	Bamboo	4	66.66
Sidewall	Wire netting	6	100
	Bamboo splint	0	0
Rearing system	Floor	6	100
	Case	0	0
	Free range	0	0
Litter material	Rice husk	5	83.33
	Saw dust	1	16.66
Feeder type	Hanging plastic feeder	2	33.33
	Bucket	4	66.66
	Attached	0	0

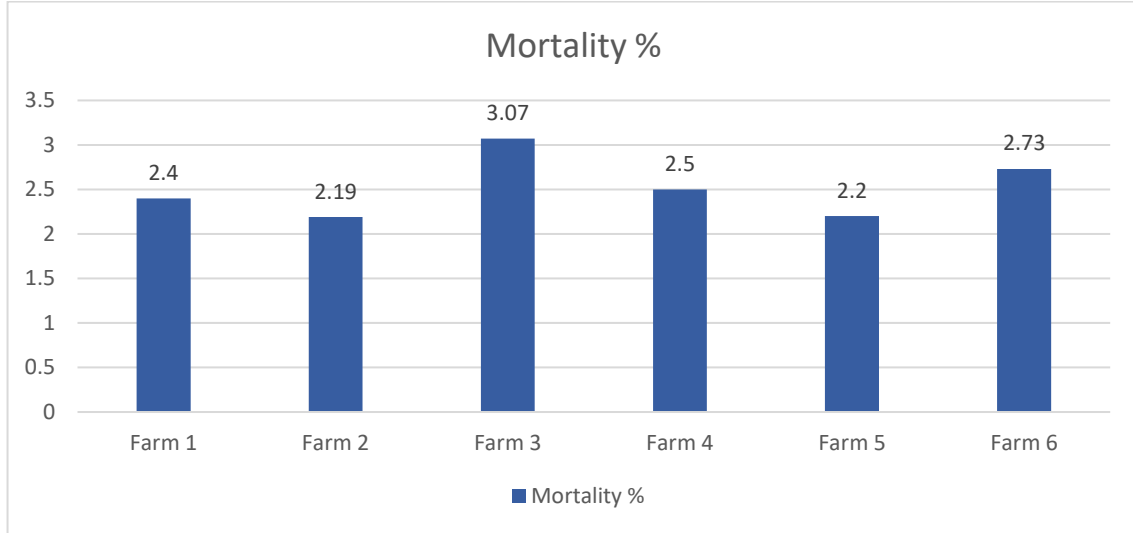
Feed type	Self-prepared	0	0
	Readymade mash	0	0
	Readymade pellet	6	100
Amount of feed per day	40-50 gm	2	33.33
	50-60 gm	4	66.66
Drinker type	Hanging drinker	1	16.66
	Pot	5	83.33
	Attached	0	0
Sue of fan	Yes	6	100
	No	0	0
Treatment	Vet	1	16.66
	Quack	1	16.66
	All	4	66.66
Vaccination & Deworming	Regular	3	50
	Irregular	3	50
Biosecurity	Strictly followed	1	16.66
	Moderately followed	2	33.33
	Not followed	3	50

### **Productivity and Mortality:**

Table 3.3 shows the productivity and mortality of Sonali chickens in selected poultry farms. Result revealed that, farm 1 produced 2440 birds, farm 2 produced 3130 birds, farm 3 produced 3877 birds, farm 4 produced 1950 birds, farm 5 produced 2445 birds and farm 6 produced 2140 birds, respectively. The mortality rate was higher in farm 3 (3.07%) and lower in farm 2 (2.19%)

**Table 3.3: Productivity and mortality of Sonali chicken of studied farm**

Farm	No. of birds	No. of dead birds	Mortality %	No. of birds produced
Farm 1	2500	60	2.4%	2440
Farm 2	3200	70	2.19%	3130
Farm 3	4000	123	3.07%	3877
Farm 4	2000	50	2.5%	1950
Farm 5	2500	55	2.2%	2445
Farm 6	2200	60	2.73%	2140



**Fig 1: Graphical presentation of mortality percentage from farm- 1 to farm- 6.**

**Economic efficiency parameters:**

Table 3.4 illustrates farm-level EEP for Sonali chickens, including bird age at selling, food consumption per bird per day (FCBD), and live weight (LW) in the study area. The selling age of the birds for the examined farm ranged from 55 to 63 days, and daily feed intake by the Sonali chickens ranged from 54.68 gm to 63 gm, with birds reared in smaller farms consuming more feed than those reared in larger farms.

**Table 3.4: Some economic efficiency parameters of Sonali chicken in studied farm:**

Farm	Birds age at selling (days)	Feed consumption per bird per day (gm)	Live weight (LW) (gm)
Farm 1	60	54.68	800
Farm 2	63	56.66	750
Farm 3	58	60	850
Farm 4	61	63	800
Farm 5	55	62	850
Farm 6	57	59.38	725

**Profitability estimate:**

Farm wise number of birds produced, GC per birds, GR per birds, benefit cost ratio per birds are presented in table 3.5. The highest and the lowest GC per bird were in farm 4 (Tk. 175) and farm 3 (Tk. 164), respectively, whereas the highest and the lowest GR per bird were in farm 3 (Tk. 208) and farm 3 (Tk. 195), respectively. Accordingly, the corresponding BCR values were the highest in farm 3 (1.27) and the lowest in farm 4 (1.11).

**Table 3.5: Profitability estimate per birds of studied farm**

Farm	No. of birds produced	Gross cost per birds (Tk)	Gross return per birds (Tk)	Benefit cost ratio per bird
Farm 1	2440	170	200	1.18
Farm 2	3130	165	206	1.25
Farm 3	3877	164	208	1.27
Farm 4	1950	175	195	1.11
Farm 5	2445	169	205	1.21
Farm 6	2140	172	200	1.16

Farm-level variations in profitability components (Table 3.6) revealed that each component had extremely significant variability for Sonali chickens produced and marketed in Ishwardi. GC per flock, GR per flock and NP per flock are shown in table 3.6 suggesting that the GC (635828 Tk), GR (806416 Tk) and NP (170588 Tk) were significantly higher in farm 3 than those of the other farms under studied.

**Table 3.6: Profitability estimate per flock of studied farm**

Farm	GC per flock (Tk.)	GR per flock (Tk.)	NP per flock (Tk.)
Farm 1	414800	488000	73200
Farm 2	516450	644780	128330
Farm 3	635828	806416	170588
Farm 4	341250	380250	39000
Farm 5	413205	501225	88020
Farm 6	368080	428000	59920

The size of the farm or flock, as well as the stocking density, have been discovered to affect the production and profitability of poultry birds. Small flocks had higher LW, FCR, and cost per bird than medium and large flocks, however net profit per flock was in the order of large flocks > medium flocks > small flocks (Tahawy et al.,2017). Similarly, the flocking density was found to be favorably associated with daily weight increase, economic performance, and bird welfare (Bergeron et al.,2000).

Sonali chicken production in commercial farms has been rising in Bangladeshi districts such as Joypurhat, Mymensingh-Gazipur, Bogura, and Naogaon since 2010 (Huque et al,2012, Uddin et al.,2014, FAO,2015), where Sonali performed better than other birds in terms of adaptability and BCR. Furthermore, Sonali chickens were chosen over local fowl. Moreover, Sonali DOCs accounted for around 35% of all commercial broiler and layer output in the country (SAC,2017). Sonali chickens were found to have a relatively high meat content in a handful of recent studies and to be the fastest-growing section of poultry in Bangladesh (Modak et al.,2019, NEA, 2020). These reports back up the current findings on the farm-level production of Sonali hens in the study area.

For 1000 broiler birds, the estimated GC, GR, and net profit (NP) were Tk. 99429, 109961, and 3631, respectively (Akhter et al.,2009). Sonali had the highest BCR of 1.11, followed by RIR and Fayoumi (1.10 each) and Cobb 500 (1.09) (Islam et al., 2012), with the average GC and GR for broilers per farm per year being Tk. 301142 and 431400, respectively. The BCR for broiler farming was substantially higher, at 1.80. For 1000 Sonali hens in Gazipur District, the average GC and GR values were assessed to be Tk. 120613 and Tk. 172672, respectively, with a projected BCR of 1.4 (Huque et al.,2012). Sonali intensive meat-producing breed had 1.49 BCR compared to commercial broiler (1.22) and commercial layer (1.11) farms, indicating that Sonali birds are a successful endeavor (Modak et al.,2019), however a popular breed called Vanaraja in Assam, India had a substantially higher BCR of 2.60 (Islam et al.,2015).

Government farms had a profitability index (PI) ranging from -0.09 to -0.13, whereas private farms had a PI ranging from 0.18 to 0.52. When compared to Fayoumi and RIR breeds, Sonali was the most popular and cheapest (Islam et al.,2012). Sonali hens in Bangladesh's northern districts were estimated to have an NP of Tk. 27.58±2.40, a BCR of 1.25±0.02, and a profitability index (PI) of 0.20±0.01(Islam et al,2014). Sonali chicken rearing was a profitable activity, as evidenced by its higher BCR (Sumy et al.,2014), according to data from Brahmanbaria, Shariatpur, and Sylhet districts. In the Mymensingh district, GC, GR, and profitability metrics for broiler production likewise demonstrated that chicken production was lucrative (Chowdhury et al.,2015).

In the present study, the GC per flock of Tk. 414800, Tk. 516450, Tk 635828, Tk 341250, Tk 413205 and Tk.368080 were estimated for farm 1, farm 2, farm 3, farm 4 and farm 6, respectively. Moreover, the GR per flock of Tk. 488000, Tk. 644780, Tk. 806416, Tk. 380250, Tk. 501225, Tk. 428000 and the NP per flock of Tk. 73200, Tk. 128330, Tk. 170588, Tk. 39000, Tk. 88020, Tk. 59920, respectively for farm 1 to farm 6 have been assessed. Variations in stocking density, farm management procedures, and selling age of birds may have resulted in apparent disparities between our findings and those of the aforementioned papers.



## **Chapter-4**

### **Conclusion**

Our current findings on the farm-level productivity and profitability components of the existing Sonali chicken farms in Pabna District's Ishwardi Upazillas have clearly demonstrated that Sonali farming is a profitable enterprise in terms of some socioeconomic parameters, including both farmers' and consumers' attitudes; consumer demand and the existing marketing systems; productivity of the number of marketable chickens per farm; mortality and price of live Sonali along with profitability components in the study area, which is quite encouraging in terms of productivity, profitability, and long-term viability of Sonali chickens farms across the country. The findings of the study could be used to encourage potential poultry farmers both in the study area and across the country.

## **Chapter-5**

### **Limitation**

In some farms, record keeping was not done effectively. Some information was gathered in an indirect manner. For management, there was no set protocol. The time frame for analyzing the productive performance was limited.

## Chapter-6

### Reference

- Akhter, S., Rashid, M. H. A., & Uddin, H. (2009). Comparative profitability analysis of broiler farming under Aftab Bahumukhi farm limited supervision and farmers own management. *Progressive Agriculture*, 20(1-2), 231-236.
- Bergeron, S., Pouliot, E., & Doyon, M. (2020). Commercial poultry production stocking density influence on bird health and performance indicators. *Animals*, 10(8), 1253.
- Chowdhury, M. S. R. C., & Chowdhury, M. M. (2015). Profitability analysis of poultry farming in Bangladesh: A case study on trishal upazilla in mymensingh district. *Developing Country Studies*, 5(19), 107-114.
- Gurung, T. R., Kabir, W., & Bokhtiar, S. M. (2017). Mechanization for Sustainable Agricultural Intensification in SAARC Region. SAARC Agriculture Centre, Dhaka, Bangladesh.
- Islam, M. S., & Dutta, R. K. (2014). Impacts of vitamin A and essential amino acids on growth performance, survivability, carcass characteristics and profitability of a crossbred chicken (*Gallus domesticus* L.) in Rajshahi, Bangladesh. *Int. J. Sci. Res. Environ. Sci*, 2(5), 174-183.
- Islam, M. S., & Hossen, M. (2021). Status of Sonali Chicken Farming in Rajshahi Division, Bangladesh: An Updated Survey. *IAR J. Agric. Res. Life Sci*, 2(3), 20-29.
- Islam, M. S., Hossen, M. F., & Rahman, M. M. (2021). Productivity and Profitability Estimates for Sonali Chicken Farms in Rajshahi, Bangladesh. *Journal of Scientific Research*, 13(3), 989-998.
- Islam, M. S., Kabir, A., & Dutta, R. K. (2012). Productivity, cost-benefit analyses, market prices and constraints to poultry farming in the northern Districts of Bangladesh. *J. Life Earth Sci*, 7, 21-27.

- Islam, R., Nath, P., Bharali, A., & Borah, R. (2015). Analysis of benefit-cost (B: C) ratio of Vanaraja and local chicken of Assam under backyard system of rearing. *J. Res. Agric. Anim. Sci*, 3(7), 7-10.
- Modak, M., Chowdhury, E. H., Rahman, M. S., & Sattar, M. N. (2019). Waste management practices and profitability analysis of poultry farming in Mymensingh district: A socioeconomic study: Poultry waste management, its impacts & BCA. *Journal of the Bangladesh Agricultural University*, 17(1), 50-57.
- Uddin, M. T., Mitu, S. J., & Begum, I. A. (2014). Production of Sonali chicken in selected areas of Gazipur district-an economic study. *Bangladesh Journal of Animal Science*, 43(1), 56-61.
- Uddin, T., Rahman, H., Saleque, A., & Thieme, O. (2015). Comparative performance of Sonali chickens, commercial broilers, layers and local non-descript (deshi) chickens in selected areas of Bangladesh. *FAO Animal Production and Health. Working Paper (FAO) eng no. 14*.
- Zabudskii, Y. I. (2016). Reproductive Function in Hybrid Poultry. III. An Impact of Breeder Flock Age. *Agricultural Biol.*, 51, 436-449.
- Zimmerman, P. H., Lindberg, A. C., Pope, S. J., Glen, E., Bolhuis, J. E., & Nicol, C. J. (2006). The effect of stocking density, flock size and modified management on laying hen behaviour and welfare in a non-cage system. *Applied Animal Behaviour Science*, 101(1-2), 111-124.

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