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## Exploratory studies on the crossbred duck farming from two upazillas under Noakhali district in Bangladesh

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### Abstract

A total number of 50 crossbred duck (indigenous × exotic crossbred) farmers from 15 villages under Noakhali district in Bangladesh were selected from April to May 2017 to explore information about crossbred duck farming. Data were collected by door to door visit using a pre-structured questionnaire and collected data were analyzed using SAS software. Fifty percent of the respondents used commercial ready feed to supplement the feed and 90.00% farmers maintained own water reservoirs to swim and scavenge of their crossbred duck with prepared mixed feed. In 90.00 % farms, housewives took care of the crossbred duck and spent the money earned from farming. Most of the farmers vaccinated (90.00%) and de-wormed (94.00%) their crossbred ducks. Natural uncontrolled flock mating system was exercised (100.00%) during study period. About 62.00% farmers selected higher egg producer and 74.00% farmers used to hatch crossbred duck eggs to produce day old ducklings. Khaki color crossbred duck ( $166 \pm 1.54$  pcs) laid the highest number of eggs and this was followed by mixed ( $156 \pm 0.88$  pcs) and white plumage colored duck ( $151 \pm 1.39$  pcs). But, Khaki color crossbred ducks ( $2.06 \pm 0.02$  kg) were heavier than those of white ( $1.72 \pm 0.04$  kg) and mixed plumage colored ( $1.68 \pm 0.05$  kg) ones. It is suggested that crossbred Khaki color ducks were better performer in the village women driven duck farms but farmers were not aware of inbreeding problems.

**Keywords:** Crossbred duck; Farming; Village; Bangladesh

### Introduction

Ducks are playing vital role in supplying complete protein to the villagers of Bangladesh. Next to chickens, ducks are main poultry species which are treated as standby money generator of village women in the coastal and *haor* area of Bangladesh. Now a day beside chicken farming small and medium scale duck farming are getting priority and popularity. According to BER (2012), duck population in Bangladesh was 45.12 million and available duck varieties and breeds are Non-descript indigenous, Sylhet Mete, Nageswari, Muscovy, Khaki Cambell, Indian Runner, Jinding, Cherry Valley and crossbreed of indigenous and exotic duck (Banglapedia, 2015). Per capita availability of milk, meat (livestock and poultry all together) and eggs, were 91.03 ml/head/day, 65.03 gm/head/day and 50.00 nos/head/year but, FAO recommended 250 ml milk/head/day, 120 gm meat/head/day and 104.00 nos of eggs/head/year, respectively (MoFL, 2013). Using locally available foodstuffs to feed

Khaki Campbell duck had no adverse effect on egg productivity (Nho and Tieu, 1997). Marshy lands were in plenty (67%) to the surroundings of the duck habitats and duck rearing was mostly lead by the women (80%) and their level of education varied from primary level (43%) to higher secondary (7%) levels. Some farmers provided supplementary feed (40%) for their ducks but most of the farmers depended on the natural feed sources (60%). Regular use of anthelmintics, supplementary feed, presence of marshy land and regular treatment helps to increase egg production and Jinding breed was found to be a good egg producer (Ghosh *et al.*, 2012). Asian continent alone accounts for 82.6% of the total duck meat production of world duck meat and eggs are relished and consumed by the people worldwide. To increase duck egg and meat on commercial level by rural household production, intensive awareness to empower rural households for duck farming is a prerequisite (Adzitey

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and Adzitey, 2011). Ducks need less care and have the natural tendency of foraging on aquatic weeds, algae, green legumes, fungi, earthworms, maggots, snails, various types of insects etc. They are very hardy bird and can adapt themselves with almost all types of environmental conditions and foraging directly reduces feeding cost (Jha and Chakrabarti, 2017). Pervin *et al.* (2013a) reported that by supplementation of improved diets growth performance of indigenous ducklings could be improved under scavenging system of rearing. Published information in crossbred duck husbandry practices from systematic research work addressing feeding, breeding and healthcare from the villages of Noakhali district in Bangladesh is scanty. So this study was designed and conducted to explore knowledge in crossbred duck husbandry practices aiming at increased duck production.

### Materials and methods

Data like number of ducks per farm, egg production, plumage color of ducks, water reservoir for swimming and scavenging, duckling collection systems, feeding system, mating system, breeding drake keeping system and healthcare system etc, were collected from a total of 50 crossbred duck farmers from 10 villages of Suborno Char and 5 villages of Hatiya upazilla (sub district) under Noakhali district in Bangladesh from April to May 2017. A pre-structured questionnaire was used to collect the data by door to door visit. At least one laying duck randomly selected in each color group to take body weight. Collected data were edited for further processing. For having frequency and means proc freq and proc means menu were used. To study the differences among means, Duncan Multiple Range Test was used and to obtain least square means the generalized linear model was followed using SAS (2006) software.

### Results and discussion

#### *Crossbred duck feeding systems*

Fifty percent of the respondents reported that they used to feed their crossbred duck with commercial ready feed as supplemental feed and many (34.00%) of them used only wheat bran for supplementation. Most of the farmers (90.00%) maintained their own water reservoirs to swim and scavenge of their crossbred ducks. All farmers reported 8 to 10 Taka per piece of egg and most of the farmers (90.00%) used to prepare mixed feed for their crossbred duck.

#### *Crossbred duck health care*

As majority of the housewives (90.00%) took care of the duck, they also spent the money earned from crossbred duck farming. Most of the farmers vaccinated (90.00%) and de-wormed (94.00%) their crossbred ducks (Table I).

#### *Breeding systems of crossbred duck*

All farmers kept crossbred ducks and they reported that ducks usually travel about 225 feet from their farm (86.00%). Farmers usually did not replace their drake in the flock until cull and natural uncontrolled flock mating system was exercised (100.00%).

It is a matter of interest that many farmers (62.00%) selected higher egg producer to form stock (Table II). Majority of the farmers (74.00%) used to hatch crossbred duck eggs to produce day- old ducklings.

#### *Production performances of crossbred ducks*

A total 622 laying crossbred ducks were documented and a total number of 521 eggs were laid on the test day at farmer's houses (Table III).

Average laying crossbred duck number per farm, egg production per day per farm and egg production in percent were  $12.44 \pm 1.34$  pc,  $10.42 \pm 1.28$  pc and 83.76, respectively.

#### *Effect of plumage color on production performances of crossbred duck*

Yearly egg production per crossbred duck and body weight significantly affected by plumage color (Table IV). However number of crossbred duck per farm was not affected significantly by plumage color. Khaki color crossbred duck ( $166 \pm 1.54$  pcs) laid the highest number of eggs and this was followed by mixed ( $156 \pm 0.88$  pcs) and white plumage color ( $151 \pm 1.39$  pcs).

On the other hand Khaki color crossbred duck ( $2.06 \pm 0.02$  kg) were heavier than those of white ( $1.72 \pm 0.04$  kg) and mixed plumage colored ( $1.68 \pm 0.05$  kg) ones.

#### *Crossbred duck feeding systems*

Half of the respondents used supplemental feed from commercial feed source to feed their crossbred ducks but many of them used only wheat bran as feed supplement. Similarly, Parvin *et al.* (2013b) reported that many farmers (47%) used home- grown feed ingredients and half of the target farmers supplemented feeds from both commercial and home-made sources. Most of the farmers had their

**Table I. Feeding and health care practices of crossbred ducks under study period**

Parameters studied		Number of farmers under observation
Test day feed item used	Wheat and soybean bran	3 (6.00%)
	No feed supply	2 (4.00%)
	Commercial ready feed supply	25 (50.00%)
	Rice, rice polish, wheat bran and mustard oil cake	3 (6.00%)
	Wheat bran	17 (34.005%)
Water reservoir for swimming and scavenging	I have of my own	45 (90.00%)
	Do not have of my own	5 (10.00%)
Who took care of crossbred ducks by	Wife	45 (90.00%)
	Husband	5 (10.00%)
Egg price	8 to 10 Taka per egg	50 (100.00%)
Who spent money earned from crossbred duck rearing?	Wife	45 (90.00%)
	Husband	5 (10.00%)
Did you use to prepare mix feed for your crossbred duck?	Yes	45 (90.00%)
	No	5 (10.00%)
Do you know when and how many vaccines are needed for crossbred duck?	Yes	45 (90.00%)
	No	5 (10.00%)
Do you vaccinate your crossbred duck regularly?	Yes	45 (90.00%)
	No	5 (10.00%)
Do you know about de-worming program for crossbred duck?	Yes	50 (100.00%)
	No	0
Do you follow de-worming program for your crossbred duck?	Yes	47 (94.00%)
	No	3 (6.00%)

**Table II. Breeding practices of crossbred ducks under study period**

Parameters studied		Number of farmers under observation
Duck breed	crossbred	50 (100.00%)
Duck movements	up to 225 feet distances from home	43 (86.00%)
	up to 300 feet distances from home	7 (14.00%)
Mating system	Natural uncontrolled flock mating	50 (100.00%)
Using timeframe of a drake for mating purpose in a flock	Up to 3 years of age of drake	10 (20.00%)
	Up to cull the drake from flock	40 (80.00%)
Do you use to select higher egg producing duck for better stock formation?	Yes	31 (62.00%)
	No	19 (38.00%)
From where do you collect ducklings?	Natural hatching at home	37 (74.00%)
	Purchase outside home	13 (26.00%)

**Table III. Total number of laying duck and egg production reported on test day at farmer's house**

Parameters studied	Number of farmers under observation
Total number of laying duck documented at 50 farmers house	622
Total number of eggs counted at 50 farmers house	521
Egg production in percent	83.76
Total number of eggs sold at 50 farmers house	660
Average laying duck number documented per farmer	12.44±1.34
Average egg production recorded per farmer	10.42±1.28

**Table IV. Mean ± SE of number of laying duck, egg production per year per duck and body weight per laying duck**

Parameters studied	Plumage color of crossbred ducks			p value
	Khaki	White	Mixed	
Number of laying crossbred ducks per farm	4.70±0.58 (50)	4.80±0.87 (50)	3.48±0.34 (50)	0.2636
Yearly egg production per crossbred ducks	166a±1.54 (50)	151c±1.39 (50)	156b±0.88 (50)	<0.0001
Body weight per laying crossbred ducks in kg	2.06a±0.02 (50)	1.72b±0.04 (50)	1.68c±0.05 (50)	<0.0001

Note: <sup>abc</sup>Means with the different superscripts differed significantly within the row ( $p < 0.05$ ). Number in the parentheses denotes the number of farms.

own water reservoirs to swim and scavenge of their crossbred duck and they used to prepare mixed feed for their crossbred ducks. An egg was sold at 8 to 10 Taka at study site. The above discussions might be suggestive that feed was supplemented from both commercial and home grown sources and water reservoirs were also important feed source of crossbred ducks.

#### *Crossbred duck health care*

Majority of the housewives took care of the crossbred duck and spent the money earned from farming. Similarly, Parvin et al. (2013b) reported, 89.50% of the duck farmers were housewives. Most of the farmers vaccinated and de-wormed their crossbred duck.

#### *Breeding systems of crossbred duck*

Farmers reported that ducks travel about 225 feet from their farm and usually did not replace their drake in the flock until cull and natural uncontrolled flock mating system was exercised. From their own interests many

farmers selected higher egg producer to form stocks. Majority of the farmers used to hatch crossbred duck eggs to produce day-old ducklings. On the contrary, most of the farmers (90%) bought day old ducklings from private hatching farms but only 10% of them bought the same from poultry research centers (Ton and Thang, 2014).

#### *Production performances of crossbred ducks*

Average laying crossbred duck numbers per farm was higher than Halder *et al.* (2007) who recorded majority of flocks comprised of 6-10 ducks and lower than Islam et al. (2002) who reported that 85.6% of the flocks comprised 20-50 ducks. Egg production in percent was higher than egg production in Sundargonj (68.8% for exotic duck) and in Netrokona (47.9% for local duck) (Khanum et al., 2005). The discussions might be suggestive that flock size was medium compared to other findings and egg production performances was better than those of the findings of some researchers at home and abroad.

### *Effect of plumage color on production performances of crossbred duck*

Plumage color affected yearly egg production per crossbred duck and body weight significantly but number of crossbred ducks per farm was not affected significantly. Khaki color crossbred ducks ( $166 \pm 1.54$  pcs) laid higher number of eggs than those of mixed color, white color, scavenging desi duck (Parvin *et al.*, 2013b) and Khaki Campbell duck reared in tribal village of Saraitoli, Ranchi, Jharkhand, India (Jha and Chakrabarti, 2017). On the other hand Khaki color crossbred ducks ( $2.06 \pm 0.02$  kg) were heavier than those of white color and mixed color and average body weight of an adult duck attained 1.30 to 1.50 kg (Parvin *et al.*, 2013b). The above discussions might be indicative that khaki color crossbred ducks were better egg and meat producers than those of mixed and white colours.

### **Conclusion**

Feed was supplemented from both commercial and home grown sources and water reservoirs were also important feed source of crossbred ducks. Majority of the housewives took care of the crossbred ducks and spent the money earned from different farming systems. Farmers used natural uncontrolled flock mating systems of their crossbred duck and majority of them used to hatch crossbred duck eggs to produce dayold ducklings. Flock size was medium and Khaki colour crossbred ducks were better egg and meat producers than those of mixed and white colours.

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