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Indigenous ruminant production scenario in a selected cluster area of Bangladesh

Md. Shahjahan^{1,2*} and A K F H Bhuiyan¹

¹Department of Animal Breeding and Genetics, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh

²Lal Teer Livestock Limited, Anchor Tower, 108, Bir Uttam C. R. Dutta Road, Dhaka 1205, Bangladesh

*Corresponding author: Dr. Md. Shahjahan, Lal Teer Livestock Limited, Anchor Tower, 108, Bir Uttam C. R. Dutta Road, Dhaka 1205, Bangladesh. E-mail: sajubau@gmail.com

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Abstract: A household survey was conducted in a preselected rural area (279 households) of Mymensingh district in Bangladesh to know the overall production and husbandry practices regarding indigenous ruminant farming and their future outlook. Data were analyzed following descriptive statistics. The average cattle (144 HHs) and goat (63 HHs) distribution per household were 1.83 and 2.14, respectively. Daily milk production of cattle and goat recorded 1.47 and 0.24 liters including the lactation period 201.98 and 87.21 days. Most of the farmers housed their cattle (88.19%) and goat (55.55%) outside the dwelling. Only 2.08% farmers purchased feed for cattle. Natural and uncontrolled breeding observed for all ruminants in the studied area. Digestive disorder (blot) in cattle (12.50%) and goat (14.29%) identified as one of the major problems in the studied areas. Vaccination practice followed very limited owners of cattle (19.44%) and goat (4.76%). Proper initiative, funding, farm-based training to educated farmers including modern animal husbandry practices could increase indigenous ruminant population in the rural area of Bangladesh.

Keywords: cattle; goat; socio-economic; management

1. Introduction

Livestock is an integral part of farming systems in Bangladesh which contributes 12% of the agricultural GDP (Karim *et al.*, 2010) and is projected to increase 19.9% in 2020 (Hossain and Bose, 2000). Those are not only secure the protein demand for human being but also draft power and fertilizer, biogas, self employment and gender empowerment, foreign currency, and emergency cash. National statistics revealed the population of cattle and goat, respectively, 23.03 and 23.28 million in Bangladesh (BBS, 2010) where about 90% of each population is native. Lack of care on indigenous breeds is associated with its extinct from Bangladesh (ILRI draft, 2009).

Cattle of Bangladesh are mostly non-descriptive and indigenous type except few improved varieties notably Red Chittagong and Pabna cattle (Bhuiyan, 1997). On the other hand, Black Bengal goat is an important animal genetic resource in the agro-based economy of Bangladesh belongs to a recognize breed which is dwarf in size and known to be famous for its prolificacy, fertility, adaptability and superior meat and skin quality (Sadullah, 1991). Ruminant production in extensive system is facing various problems including housing, feeding, diseases, lack of knowledge of rural farmers regarding quality of feed, disease prevention and control techniques (Billah *et al.*, 2013).

There are very limited research works have been performed on indigenous livestock farming including overall production and management system. Therefore this study was aimed to clarify the said issues including possible prospect from a sample cluster area of Bangladesh.

2. Materials and Methods

The survey was performed with a pre-tested survey questionnaire from 279 households (HHs) on August, 2010 in a selected area of Fulbaria sub-district named Bakda Akanda Para belongs to Mymensingh district. Households were selected randomly in that area and interviewed by an expert enumerator team of Bangladesh Agricultural University. All the gathered data were compiled, tabulated and analyzed using descriptive statistic of SPSS version 16 (SPSS Inc, Chicago, USA).

3. Results and Discussion

3.1. Description and use of ruminant

The total ruminant populations observed in the surveyed area was indigenous type (Figure 1). Non-descript deshi cattle and Black Bengal goat found as available ruminant livestock species. In goat farming, only 3.14% households slaughter goat for home consumption (n=3) but 30.16% households sold their goat (n=43) for cash.

3.2. Herd composition and distribution of ruminants

The composition and distribution of cattle herd and goat flock in the studied area are presented in Table 1 and Figure 2, respectively. Average cattle herd per households (1.83 ± 0.09) found very low, in which 29% both cow and heifer calf (0.54 ± 0.06), 8.55% bull (0.16 ± 0.04) and 13.38% calf (0.25 ± 0.4) included. The goat number in an average 2.14 ± 0.17 per flock encompassing 42.34% doe (0.92 ± 0.10), 15.33% doeling (0.33 ± 0.08) and 13.87% kid (0.30 ± 0.09). It observed that almost half of the total households in each group reared at least one cattle or goat. Two cattle or goat per household identified in 31.94% and 20.63% owners of each species. Only 2.08% households reared five or more cattle in their herd where similar goat number found in 6.35% owners.

ILRI draft (2009) reported the herd size of local cattle (1-2 heads) and goat (2-3 heads) per households in Bangladesh which showed consistency with our findings. In another study, Nandi *et al.* (2011) stated the local goat flock size (1-4 heads) in India including buck to doe ratio (1:8) in field condition.

3.3. Production performance of ruminants

The performance of indigenous cattle and goat is summarized in Table 2. The calving of local cattle was regular in each year where Black Bengal goat provided 1.76 ± 0.08 birth per year with 1.79 ± 0.09 kids in each birth. Average milk production in local cattle recorded 1.47 ± 0.22 liters with total lactation period 201.98 ± 9.58 days where as 0.24 ± 0.07 liters (mainly for kids) and 87.21 ± 3.77 days for Black Bengal goat, respectively.

The experiment of Islam *et al.* (2014) identified average 1.50 liters milk per day from local cattle of Bangladesh but this production increased to 2.3 liters after deworming and nutritional supplements. Another study of Ashraf *et al.* (2000), and Rahman and Rahman (2006) documented the lactation period of local cow about 245 and 254 days in intensive farming which varied than our findings but showed consistency regarding poor management in extensive system. Halder *et al.* (2014) studies on meat type Black Bengal goat (1.75 kids/kidding) in India which supported the findings of Hassan *et al.* (2007) who reported an average 1.96 kids per kidding of Black Bengal goat in Bangladesh. The research of Dhara *et al.* (2012) confirmed highest milk production per day of Black Bengal goat for single (1.43), twin (1.77) and triplet (2.24 kg) kidding in the 4th week of lactation, but the production declined respectively, 0.23, 0.26 and 0.26 kg in 9th week of lactation in semi-intensive system. However, milk production in same breed differs on rearing system especially nutrition, age and selection which are lack of concern in the rural extensive farming system. Our findings on lactation period closely matched with the study of Bhowmik *et al.* (2014) who stated an average 90.15 days in Black Bengal goat of Bangladesh.

3.4. Overall management system of indigenous livestock

The overall management system in the studied area is presented in Table 3. The farmers mainly kept their cattle (88.19%) and goat (55.55%) outside the dwelling although few observed inside the dwelling. Ready feed or feed ingredients purchasing was not a common practice in that area except 2.08% cattle owners. Natural and uncontrolled breeding observed for all livestock species in the surveyed area. The farmers reported blot (cattle-12.50 and goat-14.29%) as the most frequent health issues followed by PPR (goat-12.70%) and anthrax (cattle-4.86% and goat-9.52%). Limited vaccination practice recorded in surveyed area for cattle (19.44%) and goat (4.76%).

The study of Simul *et al.* (2012) observed 60% cattle house located outside the dwelling of farmers in Chittagong, in addition, farmers locally supplied whole and dry straw (45.24%), chopped and dry straw (21.43%), chopped straw soaked with water (30.95%) and straw with green grass (2.38%) to their cattle. In India, Nandi *et al.* (2011) identified housing system of Black Bengal goat in residential housing (67.10%) where houses were mostly kachha type (82.63%) with earthen floor (86.47%) and straw roof (91.33%). Mondal and

Yamage (2014) studied the prevalence of anthrax (84.5%), FMD (88.3%), HS (84.9%) and dog bite/rabies (64.3%) in the ruminants of Bangladesh, in which only 7.31%, 0.61%, 0.84% and 11.59%, respectively followed vaccination annually. They also reported PPR case in goat (94.8%) and sheep (5.2%). Kabir *et al.*, (2010) pointed out FMD (35.92%) as a prominent disease in ruminants of Kurigram district including digestive disorder (11.50%) and fever (7.76%) where this problem (blot) was most frequent in our studied area.

Table 1. Herd or flock composition of ruminants in the studied area.

Types	Cattle (HHs=144)		Per herd (Mean±SE)	Goat (HHs=63)		Per flock (Mean±SE)		
	n	Range Min.- max.		%	n		Range Min.- max.	
Bull / buck	23	0-3	8.55	0.16±0.04	14	0-3	10.22	0.22±0.08
Bullock / wether	11	0-2	4.09	0.08±0.03	6	0-2	4.38	0.09±0.04
Castrated (grower)	4	0-2	1.49	0.03±0.02	10	0-2	7.30	0.16±0.06
Cow / doe	78	0-3	29.00	0.54±0.06	58	0-3	42.34	0.92±0.10
Calf / kid	36	0-3	13.38	0.25±0.4	19	0-3	13.87	0.30±0.09
Bull calf/ buckling	39	0-3	14.50	0.27±0.05	9	0-4	6.57	0.14±0.07
Heifer calf/ doeling	78	0-4	29.00	0.54±0.06	21	0-2	15.33	0.33±0.08
Total	269	1-7	100	1.83±0.09	137	1-6	100	2.14±0.17

Table 2. Production performance of indigenous ruminant population.

Species	n	Calving or kidding/year	Calf or kid/birth	Milk production/day (liter)	Lactation period (day)
Cattle	56	1.00±0.00	-	1.47 ± 0.22	201.98 ± 9.58
Goat	33	1.76 ± 0.08	1.79 ± 0.09	0.24 ± 0.07	87.21 ± 3.77

Table 3. Different management system of indigenous livestock.

Management system	Category	Cattle		Goat	
		HH (n=144)	%	HH (n=63)	%
Housing	Inside the dwelling	9	6.25	25	39.68
	Outside the dwelling (shade)	127	88.19	35	55.55
	Kitchen	1	0.69	2	3.17
	Others	7	4.86	1	1.59
Feeding	Purchased feed / feed ingredients	3	2.08	0	0
Breeding	Natural and uncontrolled	144	100	63	100
Disease	Goat pox	-	-	3	4.76
	Gid	-	-	1	1.59
	PPR	-	-	8	12.70
	Anthrax	7	4.86	6	9.52
	Blot	18	12.50	9	14.29
	Black Quarter	1	0.69	1	1.59
	FMD	6	4.16	0	0
	Others (Diarrhoea, fever, worm)	26	18.05	5	7.94
	Vaccination	Followed vaccination	28	19.44	3
Not followed		116	80.56	60	95.24



Figure 1. Indigenous non-descript *deshi* livestock species: (a) Cattle and (b) Black Bengal goat.

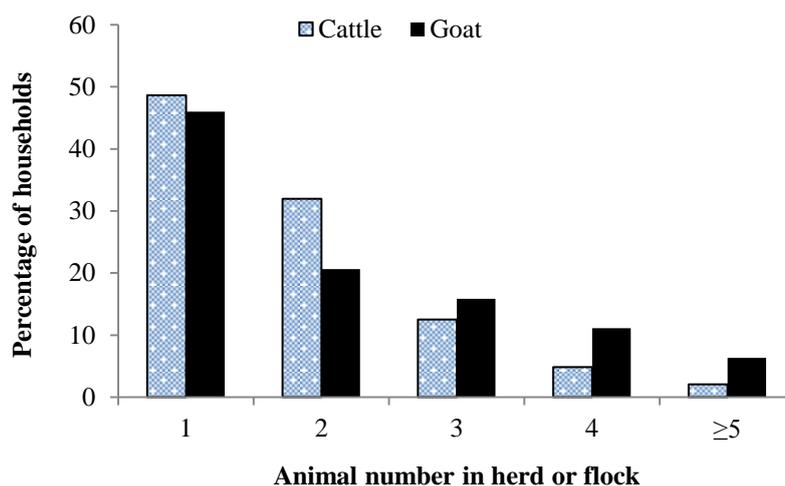


Figure 2. Distribution of ruminant population among households.

4. Conclusions

It is concluded that indigenous livestock and their productivity are very limited in the rural area. To enhance the indigenous livestock production, modern techniques could be implemented including integrated goat farming, fattening of cattle or goat especially before the festival of Eid-ul-Azha using UMB and UTS. Most of the women in the rural area involved with household works only. Therefore they could involve more efficiently than men especially for Black Bengal goat production. GOs and NGOs are highly encouraged to facilitate and ensure easy funding, agricultural training and vaccination or medication to the rural and urban farmers more especially those who want to increase livestock as a commercial aspect.

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Conflict of interest

None to declare.

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