

PRESENT STATUS OF BUFFALOES AND THEIR PRODUCTIVITY IN BANGLADESH

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Summary

1.86 million (Indigenous river, swamp, and swamp X river type) buffaloes are distributed mainly in the plain land, sugarcane belt and coastal area of Bangladesh and are raised by the small farm holders. Buffaloes per house-hold ranges from 5.79 to 2.12. Height at wither is 123 ± 3.09 and 112.5 ± 2.15 cm for buffaloes of central and eastern region respectively. Growth rate of buffalo calves ranges from 360 to 340 g/day. Late maturity (1411.58 ± 43.01 d) along with long life span facilitates farmers to use buffaloes longer period. Average daily milk yield is 2.32 ± 0.63 L with average lactation yield of 730 ± 90 l for 328 ± 28.76 d. Both male and female individuals are used for draught purpose. A pair of buffalo can prepared 0.23 ± 0.06 ha of land daily and can work for 6.1 ± 0.78 hr.

(Key Words: Distribution, Types, Productivity)

Introduction

Bangladesh, having 1.86 million buffaloes, stands 9th in Asia in term of buffalo population (FAO, 1986). During the last ten years, total buffalo population in the country has increased more than that of cattle (table 1). All the buffaloes in Bangladesh are raised in the rural areas and like cattle, play an important role in providing draught power in the agricultural operation. Buffaloes are also important source of milk and meat. Due to their contribution and importance, buffaloes are being concentrated in particular agro-ecological zones of Bangladesh.

Despite their important role in the national economy, buffaloes are often neglected animals in Bangladesh. They are often said non-descriptive types (Cockrill, 1974). No attempt has ever been made to describe these buffaloes. The purpose of this paper is to describe the present status of buffaloes as well as their characteristics and productivity, reviewing the results of research works conducted on these indigenous buffaloes until now.

Statistics and Distribution

Bangladesh possesses 1.86 million buffaloes standing 9th in the Asia. The share of the country in the proportion of total buffalo population in Asia and the World were 1.39% and 1.35% respectively in 1986. Bangladesh recorded the highest increase of buffalo population in the World of about 159% in 1986 over that of 1976. At the same time, the proportion of buffalo in the total bovine population of the country has increased from 2.51% to 7.43% (FAO, 1986). FAO report regarding buffalo population growth rate has also been supported by Bangladesh Bureau of Statistics (BBS, 1986). According to Bangladesh Bureau of Statistics (BBS, 1986) as revealed from the agricultural and livestock census report of 1984, the annual growth rate of cattle and buffaloes over the period of 1977/84 were 0.7% and 3.0% respectively indicating the increase of more buffaloes in the total bovine population of the country.

All the buffaloes are raised in the rural areas throughout the country. The distribution of buffaloes has been presented in table 2. From the table, it is clear that buffaloes are concentrated in the coastal area, sugar-cane belt and paddy cultivating areas of plain land. Availability of feeds, wallowing facility, marketing facility and utility facilitate to raise more buffaloes in those areas. The number of buffaloes per house-hold

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TABLE 1. BUFFALO POPULATION IN SOME ASIAN COUNTRIES AND THEIR SHARE IN ASIA AND THE WORLD

	Buffalo population (thousand)		Change in buffalo population in 1986 over 1976 (%)	Proportion of buffalo in total bovines (%)		Share of countries in buffalo population of Asia(%)		Share of countries buffalo population of the world(%)	
	1976	1986		1976	1986	1976	1986	1976	1986
World	131906	138352	+4.89	9.81	9.82	-	-	100.00	100.00
Asia	128511	134199	+4.43	26.43	25.72	100.00	100.00	107.53	47.00
India	61087	75010	+22.80	25.31	27.28	47.54	55.40	46.32	54.22
Bangladesh	719	1860	+158.70	2.51	7.43	0.56	1.39	0.55	1.35
Burma	1700	2146	+29.18	18.89	18.04	1.33	1.64	1.29	1.59
China	30121	20038	-33.48	39.17	23.05	23.44	14.94	22.84	14.49
Indonesia	2786	2936	+5.39	1.92	31.23	2.17	2.19	2.12	2.13
Iran	130	230	+76.93	7.76	2.68	0.11	0.18	0.10	0.17
Iraq	175	150	-14.29	31.25	8.83	0.14	0.12	0.14	0.10
Kampuchea	869	705	-18.88	69.95	30.98	0.68	0.53	0.66	0.51
Laos	1166	1017	-12.78	37.14	63.17	0.91	0.76	0.84	0.74
Nepal	3930	2890	-26.47	44.24	31.20	3.06	2.16	2.98	2.09
Pakistan	10795	13384	+23.99	68.28	44.42	8.40	9.98	8.19	9.68
Philippines	5000	2984	-40.32	32.88	62.20	3.89	2.23	3.79	2.16
Srilanka	854	964	+12.88	55.60	35.10	0.67	0.72	0.65	0.70
Thailand	5379	6302	+17.16	7.10	56.59	4.19	4.70	4.08	4.56
Turkey	1051	540	-48.62	5	3.23	0.82	0.41	0.80	0.39
Vietnam	2260	2700	+19.47	54.99	51.93	1.76	2.02	1.72	1.96

Source: FAO, 1986

TABLE 2. DISTRIBUTION OF BUFFALOES IN BANGLADESH

Region	District	House-hold	Buffalo		
			Total	per-house	Percent
Plain land	Rajshahi	17,900	38,300	2.12	48.3
	Jessore	1,224	3,098	2.53	
	Rangpur	14,143	38,947	2.75	
	Mymensingh etc.	5,857	12,898	2.59	
(Sugar-cane belt including Rajshahi, Pabna etc.)					42.8
Coastal belt	Khulna	8,575	39,694	4.63	39.9
	Patuakhali	13,972	75,133	5.79	
	Chittagong etc.	5,313	19,622	3.62	
Marshy land	Selhet	15,809	33,663	2.55	11.8
Hilly area	Chittagong hill tracts	2,551	14,200	5.57	3.0
Rural area		-	-	-	99.9
Urban area		-	-	-	0.1
Commercial farm			Nil		
Research farm			180 animals in 2 farms		
Small house-hold			1.8 million animals		

Source: BBS - Bangladesh Bureau of Statistics

is the highest in the coastal area and hilly areas (5.78 and 5.57 respectively) and lowest in the plain land (2.12). The facility for more grazing land in those areas is the main cause for such higher concentration.

Genotypes

Domestic buffaloes of Bangladesh belong to *Bubalus bubalis* (Faruque et al., 1987). Except for the buffaloes of Eastern region, Bangladeshi buffaloes have the same origin as those of Indian.

Buffaloes of the Eastern region have received some genes of swamp buffaloes found in South – east Asia (Amano et al., 1984, 1987). From their studies it is clear that chromosome polymorphisms and blood protein polymorphisms exist within these buffaloes. These studies support that swamp buffaloes exist in Bangladesh in addition to river and cross types (table 3). River types are found in the Western and Central parts of Bangladesh whereas swamp and cross types are found in the Eastern part of Bangladesh. The past geographical boundary and migration of animals is perhaps responsible for this. The Western and Central region of Bangladesh were bound to present India, and so the animals migrate from India as civilization spread from Western part to Eastern part of India (Allchin, 1969; Peter and Dumbleby, 1969). On the other hand, geographically the Eastern region was more similar to mountainous regions of India and Burma, and inhibited primarily by tribal people. It was also bound to some part of Burma for long time in the past. The migration of animal

TABLE 3a. KARYOTYPE OF BANGLADESHI BUFFALOES

Sample No.	Sex	Region	Chromosome number
B-4	Male	Eastern	48
B-1,5	Female	Eastern	48
B-3	Female	Eastern	49
B-7	Female	Central	49
B-6	Female	Central	49
(Murrh X Manipuri)			
B-8 (Deshi)	Male	Central	50

Source: Amano et al., 1987

TABLE 3b. ELECTROPHORETIC VARIATION OF BLOOD PROTEIN AND GENE FREQUENCIES OF WATER BUFFALOES

Locus	Phenotypes	Gene frequencies		
		Western region	Central region	Eastern region
Alb	A	.4167	.4706	.3571
	X	.0000	.1176	.3571
	B	.5833	.4118	.2858
Tf	A	.0000	.0000	.0286
	D	.1667	.1175	.3714
	E	.8367	.8824	.6000

Source: Amano et al., 1984

(swamp buffalo) in that period may have contributed some genes of swamp buffaloes in the Eastern region of Bangladesh (Amano, et al., 1984; Faruque et al., 1985).

Phenotypes

Coat colour, horn pattern and other phenotypic characteristics show a wide variation. Coat colour of buffaloes of Western region is mainly jet black, whereas those of Central and Eastern region is deep grey to light grey. Horns of buffaloes of Eastern region are crescentic in shape whereas those of Central and Western region are curly to spiral. The heart girth, length, height and weight of mature river buffaloes were found to be 182.62 ± 21.7 cm, 136.75 ± 17.8 cm, 123.6 ± 3.09 cm and 550 kg respectively (n = 50 and in the central region) (Hasnath, 1985; Faruque, 1988; Faruque, 1989). The height and weight of adult mature swamp buffaloes in the Eastern region were found to be 112.54 ± 2.15 cm and 400 kg respectively (n = 4). Studies by various authors (Hwa et al., 1985; Qui Huai, 1986; Chantalakhana, 1988) indicate that the smaller size swamp buffaloes have mature body weight of 400 kg with a height of about 120 cm. In the present study the smaller size of swamp buffaloes might be due to measurement on few animals in a single region.

Productivity

Nutrition

Nutritional experiments conducted on indigen-

ous buffaloes in the Agricultural University from 1979 to 1988 indicate that buffaloes can utilize all kinds of feeds equally as revealed by their metabolic activities (Faruque et al., 1982, 1986; Hasnath, 1985; Akbar, 1988). Studies also indicate that incorporation of urea and fish meal in the ration improve the digestibility of feeds and total volatile fatty acid production in the rumen. Supplementation of fish meal upto 400 g to the urea treated straw (1% of dry matter of ration) increased the digestibility of feeds.

Growth rate

The birth weight of river types were found to be 28.66 ± 7.5 kg (Faruque, 1989). This result is more or less similar to the findings of various authors (CIBR, 1986; Bunyavejchewin et al., 1989; Bangso, 1989). No report on the birth weight of swamp type is available here. The daily gain as reported by Faruque (1989) and Hasnath (1985) were $340 + 56$ g and 360 g respectively for buffalo calves below 1 year of age. These results indicate that growth rate of Bangladeshi buffalo calves were lower than those of other countries. Bunyavejchewin et al. (1989) reported daily gain for Murrah calves to be 600 ± 80 g. Given on good quality feeds, they can gain upto 1000 g/day (Mudgal, 1988). The lower growth rate in the Bangladeshi buffalo calves might be due to heavy infestation of worms and low nutritional status.

Breeding characteristics

Table 4 represents the breeding characteristics of female indigenous buffaloes of Central region. From 114 observations, 24.56% animals matured within 3 years, whereas 29.82% at 3.0 – 3.5 years, 15.79% at 3.5 – 4.0 years, 7.01% at 4.0 – 4.5 years, 7.02% at over 5 years. This wide variation of sexual maturity might be due to variation of their management system and nutritional status. But the observation is more or less an approximation with Aminuddin et al. (1986). The same conclusion may be equally applied to the other parameters. On the other hand, slow maturity along with long life span facilitates the farmers to use buffaloes for longer period.

Very little information is available on the male buffaloes here. The authors found the age at puberty for male buffaloes in the Central region to be about 3 years. Amin (1987) reported the

TABLE 4. BREEDING CHARACTERISTICS OF INDIGENOUS BUFFALOES

Parameter	Nc. of observation	Mean
Age at first heat	114	1411.58 ± 43.01 d
Age at first calving	114	1735.47 ± 42.33 d
Calving interval	208	544.04 ± 17.57 d
First post-partum heat	132	179.32 ± 10.31 d
within 120d	48	36.36%
within 121-240d	63	47.73%
over 240d	21	15.91%
Average service required per conception	228	1.86

Source: Mostafa et al., 1989

semen volume for indigenous male buffaloes to be 2.6 ml on an average with a concentration of 1088 mil/ml. This finding is in agreement with Sidhu and Guraya (1988).

Milk production

Bangladesh produced 1.52 million MT of milk in 1986. Total buffalo milk production in that time was 27,000 MT. Total buffalo milk production decreased 37.21% in 1986 over that of 1976. Studies conducted reveal that average daily milk production per buffalo cow in the central region is 2.32 ± 0.63 l with average lactation yield of 730 ± 90 l for $328 + 28.76$ day lactation period. Fat % in the milk was found to range from 6.8 to 13.2 (Hussain, 1988; Faruque, 1989).

Meat production

Average live weight at slaughter was observed to be 320 kg with 44% dressing percentage (Hasnath, 1985). The low dressing percentage is perhaps slaughtering of animals at older age when animals are usually emaciated. It may be mentioned here that buffalo meat is not well accepted in the country. The most popular meat is goat meat, next choice is for cattle meat.

Draught capacity

Farmers prefer buffaloes to cattle due to their outstanding draught capacity and this is the reason for calling the buffaloes as the beast of burden. Buffaloes, being heavier and larger, can be used in the Single Animal Plough (SAP). SAP is practised in Sylhet and other districts bordering with the

Indian states of Assam, Meghalaya and Tripura (Jabber, 1985). Jabber(1985) reported that farmers using SAP cultivated on an average 1.3 times more land per plough than those using only Double Animal Plough(DAP). The cost of buffaloes, size of the holding and lack of technical knowledge are the constraints for spreading SAP in other regions. On the other hand, single buffalo carting is being popularized in the sugar-cane belt. Besides DAP, buffaloes are used for threshing paddy, crushing sugarcane and carting in the rural areas. Studies carried out in the last year indicate that a pair of buffalo can cultivate 0.23 ± 0.06 ha of land and work for 6.1 ± 0.78 hr daily, mainly in the morning and evening (Hussain, 1988). They can draw cart at a speed of 3 km/hr for 3-4 hr and can thresh sugar-cane 270 kg/hr. These findings are similar to those reported by Acharya (1988) and Bunyavejchwin et al. (1989).

Conclusion

Increasing buffalo population proves its utility to farmers. Immediate experimental work should be undertaken to find out relative economic merit between cattle and buffaloes to establish the cause behind the fact. Government initiative to spread SAP and to popularize buffalo meat will help to encourage farmers to raise more buffaloes resulting in the better future prospect of buffaloes in the country.

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