

**GROWTH PERFORMANCES AND HUSBANDRY PRACTICES OF HOLSTEIN-FRIESIAN X LOCAL CROSSBRED CALVES IN THE VILLAGES OF PABNA AND NATORE DISTRICTS IN BANGLADESH****Hossain MS<sup>1</sup>, Rashid MHO<sup>2</sup>, Sarker SC<sup>3</sup>, Trisha AA<sup>4</sup>, Sumon MRA<sup>5</sup>, Majumder MKH<sup>5</sup> and Islam F<sup>1\*</sup>**<sup>1</sup>Dept Animal Breeding & Genetics, BAU, Mymensingh, Bangladesh<sup>2</sup>Asst General Manager, PRAN Dairy Ltd, Dhaka; <sup>3</sup>Dept Agril Econ, BAU, Mymensingh, Bangladesh<sup>4</sup>Dept Pathology, BAU, Mymensingh, Bangladesh; <sup>5</sup>Bangladesh Livestock Research Institute, Savar, Dhaka, Bangladesh\*Corresponding Author: E-mail: [farukkrishibid@gmail.com](mailto:farukkrishibid@gmail.com)**ABSTRACT**

A total of 31 dairy crossbred calves and 42 farmers from 20 villages of Vangura and Chatmohor upazilas of Pabna district and Singra, Gurudashpur and Boroigram upazilas of Natore district in Bangladesh during July 2015 to October 2015 were enumerated to explore knowledge about the husbandry practices of crossbred calves. Male calves (30.97±1.00 kg) were heavier than female (28.06±1.24 kg) by birth weight and body weight at puberty, age at puberty and average daily weight gain from birth to puberty of female calves was 186.45±3.52 kg, 17.48±0.30 months and 0.304±0.007 kg, respectively. Farmers were alert about colostrums and milk feeding but they were not knowledgeable about assessments the requirement and allocation of colostrums and milk. Knowledge of farmers about separate calf housing was poor. However, farmers at study sites had sound knowledge about female calves' husbandry, special care for a cow just after parturition and breeding technology to increase productivity of dairy cows.

**Key words:** Crossbred calves, husbandry practices, Bangladesh**INTRODUCTION**

Production potentialities of the common local cattle in Bangladesh were lower as compared to improved varieties like: Pabna Cattle, Red Chittagong, Munshiganj Cattle, and North Bengal Grey Cattle. Exotic breeds like, Holstein-Friesian, Jersey, Sahiwal, Harianas, Sindhi, Australian, Sahiwal-Friesian, etc were introduced here in Bangladesh. A number of exotic pure breeds, their crossbreeds, and upgraded cattle were found in the government dairy farms, commercial dairy farms, milk pocket area, and in urban and semi-urban areas of Bangladesh (Banglapedia, 2014). In Bangladesh annual requirement is 13.32 million tons (MT) of milk but annual production of milk is 3.46 million tons (BER, 2012). Livestock is a vital component among four subsectors of agriculture, like: crops, livestock, fisheries and forestry in Bangladesh. This subsector of agriculture is contributing about 3.10% to gross domestic products (GDP) and more than 6% of total foreign exchange earnings in Bangladesh (BER, 2015). Goat (25.20 million) and cattle (23.30 million) in Bangladesh dominated the livestock population mainly, though there were some buffalo (1.50 million) and sheep (3.10 million) also (DLS, 2013). Among 23.4 million cattle population about 3.53 million milking cows, 2.61 million dry cows (cows without milk), 2.13 million draught cattle, and 4.20 million improved cattle were documented (Banglapedia, 2014). Friesian x Local crossbred contributes about 24% of the 6.9 million breedable cows and heifers (Huque *et al.*, 2011). There was no developed recording system in Bangladesh for dairy cattle economic and genetic but the commercial farmers regularly maintains health and milk production record for their cows (Alam *et al.*, 2009). Over the decades, the Friesian x Local crossbred cows' milk production performance considerably improved (from 5 to 12 liters/day) gradually (linear) under Bangladesh condition (Bhuiyan, 2011). Improving environmental conditions and

management practices, along with genetic potential of dairy animals would be more effective approach to improve production capacity. Among the various mating systems to improve genetic potential of the dairy animals, crossbreeding of local non-descript cattle with exotic breeds of high genetic potential is considered to be a rapid and effective method. Many efforts have been taken using Holstein Friesian and other exotic hi-yielding breeding bull through crossbreeding with local cattle to improve milk production in Pabna and Natore districts of Bangladesh. Growth and productivity of future dam and sire not only depends on the genetic merit of the animals but it depends also on care and husbandry practices of calves (future dam and sire) greatly. So, the present study was designed to explore knowledge about the husbandry practices of crossbred calves.

**MATERIALS AND METHODS**

A total of 31 dairy crossbred calves and 42 farmers from 20 villages of Vangura and Chatmohor upazilas of Pabna district and Singra, Gurudashpur and Boroigram upazilas of Natore district in Bangladesh during July 2015 to October 2015 were enumerated. An in-depth survey was performed at household level and detail information on growth of 31 crossbred calves and husbandry practices of 42 farmers were documented. Collected data were stored onto excel spread sheet and then the data were edited for further analysis. The design of the study was unbalanced factorial in nature, because observation number of different traits was unequal. Data were analyzed for having frequency, percentages and mean value using descriptive statistics menu, while compare means menu was used to have mean differences and their level of significance through ANOVA table under the Statistical Package for the Social Sciences version 14.0 (SPSS, 2005).

## RESULTS

**Growth performances of crossbred calves**

Male calves (30.97±1.00 kg) were heavier than female (28.06±1.24 kg) by birth weight but the difference were (P>0.05) not significant. Average daily body weight gain did not differ significantly. However, body weights at 60 days of age were significantly differed (Table 1).

**Calves feeding practices**

Most of the farmers supplied the colostrums to calves but some of them (33.33%) assisted calves to suck colostrums from direct sucking the udder. But some farmers (33.33%) allocated the colostrums as per need of the calves. Interestingly noted that many farmers (38.10%) allocated milk as per requirements of calves while most of them (76.20%) milked the cows twice in a day (Table 2). Nearly every farmer (97.60%) understood whether their calves were getting milk at their satisfactory level or not. Though only 23.80% allocated milk to calves according to the requirements as per their body weights. On the other hand most of the farmers (81.00%) reported occurrences of

diarrhea of calves due to over milk feeding. Similarly most of the farmers (78.60%) did not keep ADG of calves.

**Calves housing practices**

Most of the farmers (71.40%) kept calves in the house of adult cattle and some farmers (38.10%) kept calves in separate calf chambers of calf house up to 60 days of age (Table 2).

**Care and husbandry process**

Many of the farmers (47.61%) did not have institutional training in calf husbandry but special care of feeding of the cows taken by 93.00% farmers just after parturition (Table 3). To make a good dairy cow for future 95.30% farmers took special care of female calves. Majority of the farmers (71.43%) had not experience in handling a cow during parturition. Most of the farmers (92.86%) provide with green grass and concentrate to calves at the age of 3 months and reduced of milk allocation for calves. Only 4.76% farmers did seek veterinary services from government veterinary doctors.

**Table 1. Growth performances of Holstein-Friesian × Local Cattle Calves (Crossbred calves)**

Traits	Male calves	Female calves	LS
Birth weight in kg	30.97±1.00 (31)	28.06±1.24 (31)	NS
Body weight at 60 days of age in kg	56.94±1.48 (31)	52.00±1.57 (31)	*
Average daily weight gain in kg	0.433±0.017 (31)	0.398±0.024 (31)	NS
Body weight at puberty in kg	-	186.45±3.52 (31)	-
Age at puberty in month	-	17.48±0.30 (31)	-
Average daily weight gain (ADG) at puberty in kg	-	0.304±0.007 (31)	-

Note: LS=Level of significance, NS= Not Significant (P>0.05), \*significance at 1.1 to 5% (P<0.05).

Body weight at puberty, age at puberty and ADG at puberty of female calves was 186.45±3.52 kg, 17.48±0.30 months and 0.304±0.007 kg.

**Table 2. Calves feeding and housing practices**

Item practiced	Category	Farmers
Colostrums feeding process	Udder suckling by calves	14 (33.33%)
	Milking and then supply to the calves	28 (66.67%)
Colostrums allocation process	Traditional	8 (19.00%)
	Measurement as per requirements	14 (33.33%)
	Eye observation to feed calves	20 (47.67%)
Milk feeding process	Adlibitum by direct udder suckling	26 (61.90%)
	Milking and measuring as per requirements of calves	16 (38.10%)
Milking frequency in a day	Once	1 (2.40%)
	Twice	32 (76.20%)
	Thrice	9 (21.40%)
Do you understand whether the calf taken milk as per his or her satisfaction?	Yes	41 (97.60%)
	No	1 (2.40%)
Do you feed milk to the calf as per his or her body weight?	Yes	10 (23.80%)
	No	32 (76.20%)
Do you keep daily body weight gain of your calves?	Yes	9 (21.40%)
	No	33 (78.60%)
Do you keep your calves in separate calf chambers of calf house up to 60 days age?	Yes	16 (38.10%)
	No	26 (61.90%)
Did your calf get diarrhea due to over drinking milk?	Yes	34 (81.00%)
	No	8 (19.00%)
Where do you keep your calves at night?	Separate house	12 (28.60%)
	In the house of cows with adult cattle	30 (71.40%)

**Table 3. Care, husbandry and breeding practices of calves**

Item practiced	Category	Farmers
Special care of feeding the just after parturition	Yes	40 (93.00%)
	No	3 (7.00%)
Calf husbandry training obtained from the institutes like	Govt. youth development training centre in Bangladesh	4 (9.52%)
	Did not have institutional training	20 (47.61%)
	Pran RFL Ltd.	18 (42.86%)
Special care of calf taken or not to be a good dairy cow in future?	Yes	41 (95.30%)
	No	2 (4.70%)
Do you use high merit breeding bull for having meritorious calves?	Yes	42 (100.00%)
	No	0
Semen selection for artificial insemination	Owner	31(73.80%)
	AI worker	10 (23.80%)
	NGO worker	1 (2.40%)
Do you have experience in handling a cow during parturition?	Yes	30 (71.43%)
	No	12 (28.57%)
Calf preference	Male	8 (19.05%)
	Female	1 (2.38%)
	None	33 (78.57%)
Green grass and concentrate feeding at the age of 3 months and reduction of milk allocation for calves	Yes	39 (92.86%)
	No	3 (7.14%)
Veterinary service provider	Village doctor	26 (61.90%)
	Govt. Veterinary Doctor	2 (4.76%)
	NGO doctor	1 (2.38%)
	Veterinary Doctor of Pran RFL Ltd.	13 (30.95%)

**Breeding practices**

Majority of the farmers (78.57%) did not have preference between male female, rather they would prefer either male or female, whatever they got. It was a matter of great hope and prospects that most of the farmers (73.80%) could select semen donor bull breed of their own (Table 3). Very interestingly, all farmers used high merit breeding bull for having meritorious calves.

**DISCUSSION****Growth performances of crossbred calves**

Birth weights of crossbred calves from the cross between Holstein-Friesian and Local cattle genotypes were very close to the mean weight of calves at birth for (29.89 kg) male and (28.56 kg) female (Rahman *et al.*, 2015). However, ADG (birth to puberty) of female calves were lower than Rahman *et al.*, (2015), who found, the average daily gain (birth to 6-month) of female calves 398.85 gm/day. Body weight of female calves at 17.48±0.30 months of age were 186.45±3.52 kg. On the other hand weaning weight recorded by Chen *et al.* (2012) in Piedmontese and Nanyang as 293 kg; Naser *et al.* (2012) in Brangus as 226 kg; El-Saied *et al.* (2006) in Charolais as 278.21 kg and Gaur *et al.* (2003) in crossbred cattle 136.85 kg.

**Calves feeding practices**

Some farmers assisted calves to suck colostrums from direct suckling the udder and most of them supplied the colostrums to calves after collecting colostrums from udder manually, similarly, Listiari *et al.* (2015) found, most of the farmers supplied colostrums to calves using bucket. Some farmers allocated the colostrums as per need of the calves. On the other hand Listiari *et al.* (2015) documented that in

most of the farms calves was fed colostrums 2 liter per day and in many farms calves received between 1-2 liter/day, and there were few farms gave less than 1 liter/day. Most of the farmers milked the cows twice in a day and nearly every farmer understood whether their calves were getting milk at their satisfactory level or not. Only 23.80% allocated milk to calves according to the requirements as per their body weights. Most of the farmers provide with green grass and concentrate to calves at the age of 3 months and reduced of milk allocation for calves. Farmers reported occurrences of diarrhea of calves due to over milk feeding but only a few farmers did seek veterinary services from government veterinary doctors. However, Diarrhea, bloat, pneumonia and navel ill were the frequent syndromes (Listiari *et al.*, 2015). The above discussion might be suggested that farmers were aware about colostrums and milk feeding to the calves but they were not technically sound to allocate milk and colostrums because most of them did not supply milk and colostrums as per bodyweight measurements and they only could assume that calves were getting milk at satisfactory level.

**Calves housing practices**

Nearly every farmer kept calves in the house with adult cattle together but some of them kept calves in separate calf chambers of calf house up to 60 days of age. On the contrary Listiari *et al.* (2015) reported that 86 % farmer separated calves within 24 hours after birth and placed calves in individual wood crate in 90% farms, 6% in concrete floor, and 4% in soil floor. However, Matondi *et al.* (2014) found that calf survivability were higher in individual rearing than in group rearing house. The discussion might be indicative that farmers at present study were not knowledgeable about the importance of separate calf chamber of calf house.

**Care and husbandry process**

Many of the farmers did not have institutional training in calf husbandry but most of them took special care of feeding of cows just after parturition. While, to make a good dairy cow for future 95.30% farmers took special care of female calves. Majority of the farmers had not experience in handling a cow during parturition. However, Quddus (2012) documented that illiterate farmers were 9.7 times less likely to be adopting improved technologies compared to secondary and higher educated farmers. The discussion might be suggested that farmers were knowledgeable about female calves' husbandry and how to take special care for a cow just after parturition.

**Breeding practices**

Majority of the farmers liked to have a calf, and they did not use to differ between male and female calves. Most of the farmers themselves selected breeding bull to artificially inseminate their cows and wise fully they used high merit breeding bull for having meritorious calves. On the contrary, Deshi cattle were popular to the villagers in Sylhet district and natural insemination system was the main way of breeding (Islam et al., 2016). The above discussion might be suggested that farmers at present study knew how to use breeding technology to improve productivity of dairy cattle.

**CONCLUSION**

Farmers were aware about colostrums and milk feeding to the calves but they were not technically sound to allocate milk and colostrums because most of them did not supply milk and colostrums as per bodyweight measurements and they only could assume that calves were getting milk at satisfactory level. Farmers at present study were not knowledgeable about the importance of separate calf chamber of calf house but they were knowledgeable about female calves' husbandry and knew how to take special care for a cow just after parturition. However, they knew how to use breeding technology to improve productivity of dairy cattle.

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