Performance of Red Chittagong cattle in some selected Areas of Chittagong district of Bangladesh

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Abstract

A survey was conducted to estimate the productive and reproductive performances of RCC in Rawjan, Chandanaish, Potia, Satkania and Anowara upazillas of Chittagong, Bangladesh. The farmers of the study areas holding Red Chittagong Cattle (RCC) were divided into large (>1.50 acre), medium (>1.0-1.5 acre), marginal (>0.5-1.0 acre) and landless (>0-0.5 acre) categories. Existing feeding and rearing practices, productive and reproductive performances of RCC were investigated. It was found that, most of the RCCs (82%) were reared mainly by the marginal farmers. In between May to September, there was a severe shortage of feeds and fodders for RCC. However, despite severe shortage, the farmers were not interested to cultivate fodder. The degree of shortage for feed round the year had significant variation ($p<0.01$) among the farmers of all categories. Similar to feed shortage, the tendency of growing non-legume crops had marked variation ($P<0.01$) among the farmers of all categories. Birth weight, weaning weight, daily milk yield, lactation length, calving interval, age at first service, age at first calving and gestation length were 14.5 kg, 64.6 kg, 2.1 liters, 216 days, 14 months, 2.7 years, 42 months and 279.9 days respectively. It could therefore be inferred that, productivity of RCC may be increased by improving feeding systems in the study areas.

Key words: Red Chittagong Cattle, management, productive and reproductive performance

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Introduction

Cattles are important domestic animal in Bangladesh. Most of the indigenous cattles in Bangladesh are of zebu type. Among them, some improved cattles such as, Red Chittagong Cattle (RCC), Pabna cattle, Munsinganj cattle, Manikgonj cattle and North Bengal Grey cattle are potential producers of milk and meat. The RCCs are considered as the national heritage of Bangladesh. They are tropically well adapted and distributed mostly in the southern regions (Raozan, Potia, Anowara and Chandanaish upazillas of Chittagong) of Bangladesh (Hossain 2005). RCC has distinct phenotypic characteristics like smaller size with red coat color, distinct reddish color of muzzle, horn, hoof, ears, eyeball, eyebrow, vulva and tail switch (Mason, 1988). Although milk production of RCC dairy cows are lower than crossbreed cows, their other performances like feed conversion ratio (FCR), production of calf per year and disease resistance capacity are better. They can survive with locally available low quality feed resources (Mondal et al. 2005). Therefore, to improve the productivity of RCC, current study was undertaken addressing the factors associated with production systems of RCC and the dynamics of their feed availability.

Materials and Methods

Survey area

The RCCs are concentrated mainly in seven southeastern districts of Bangladesh (Hossain 2005). These areas are located in the boarder Chittagong and Chittagong Hill Tract areas and in boarder of Noakhali areas (Noakhali, Feni, Laksmipur). Therefore, the study area was selected as Rawjan, Chandanaish, Potia, Satkania and Anowara upazillas of Chittagong district on the basis of RCC density.

Data collection

Data were collected through door to door visit by personal interview from randomly selected individual dairy farmers. A brief introduction regarding the nature and purpose of the study was explained to the farmers before actual interview. Questions were asked systematically and explanation was given wherever necessary.

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Farmers usually did not keep any records of their day to day transactions of farm activities. It was, therefore, difficult to collect actual data and the researcher had to rely on the memory of the farmers. To overcome this problem, of course, all possible efforts were made by the researchers themselves to ensure the collection of reasonably accurate data on recall basis. A pretested questionnaire was prepared on the basis of research methodology and objectives with the help of the livestock officials of the study areas and the data were collected from January 2008 to January 2009.

Data analysis

Data related with feeding systems, rearing systems, productive and reproductive performances of RCCs were collected from the selected areas and compiled by using Microsoft Excel 2007. Data were subjected to χ^2 test by using Statistical Package for Social Sciences (SPSS 19.5).

Results and discussion

Categorization of farmer

The farmers of the research areas were categorized as large (>1.50 acre), medium (>1.0-1.5 acre), marginal (>0.5-1.0 acre) and landless (>0-0.5 acre) class. Marginal size farmers were the highest RCC owner (82%) (Figure 1), whereas, the landless and medium farmers held 6% and 9% RCC, respectively. The large farmers held only 3% of the RCC.

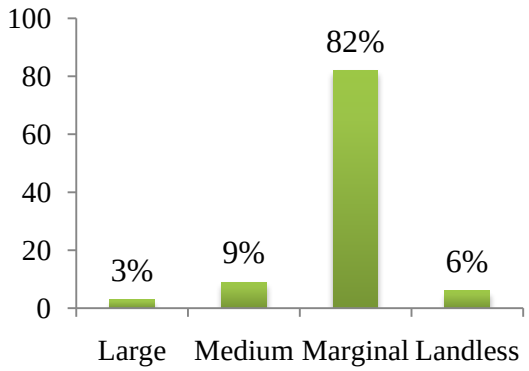

Figure 1. *RCC holders according to farm category in the study area*

Feeding and management systems

Stall-feeding was the main system of feeding followed by limited grazing in some cases. They used to supply chopped rice straws (40%), green forages (60%) like road side grass, German (*Echinoclora grousgali*), Maize (*Zea mays*), Jumbo (*Sorghum vulgare*), Sesbania (*Sesbania rostarica*); concentrate mixture prepared with wheat bran (20%), rice polish (20%), broken rice (20%), oil cake (20%), pulse husk (15%), soybean meal (4.5%) and common salt (0.5%) as 'JAU'. The animals were reared in the same style throughout the year.

Feeding of cattle during crisis period

During shortage of cattle feed, farmers in study areas used tree leaves like jack fruit, banana, *acacia* etc. to feed their cattle as the main feed resource. The percent of the tree leaves users are shown in Figure 2. It was found that the large category farmers used the highest percentage of tree leaves (34%) followed by marginal (30%), medium (26%) and landless (10%) farmers.

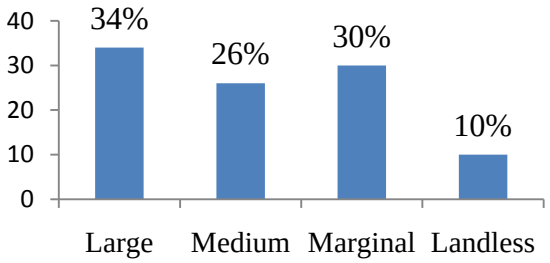

Figure 2. *Farmers using tree leaves in the study area*

Shortage of feeds and fodders

It was found that the shortage of feeds and fodders for the farmers of all categories differed significantly ($p<0.05$) from May to September in comparison to the rest of the months. However, during other months of the year, the shortage was moderate and not remarkable ($P>0.05$). The drought season might be the reason for the shortage of feed during that time. It was also found that the degree of shortage of feed in each month had significant variation ($P<0.01$) among the farmers of all categories. It was also found that there was a significant effect ($P<0.01$) of season over availability of feed irrespective of the categories of farmers (Table 1).

Table 1. Shortage (% of requirement) of feeds and fodders in different period according to farm category

Period	Type of farmer				Average	SE	Sig.
	Large	Medium	Marginal	Landless			
January	17.8	20.7	27.3	32.9	24.7	3.4	NS
February	22.3	25.9	34.1	41.1	30.9	4.2	NS
March	26.3	41.9	34.2	32.2	33.7	3.2	NS
April	60.2	80.2	70.3	52.2	65.7	6.1	NS
May	45.8	65.1	71.0	31.3	53.3	9.1	**
June	49.6	41.2	57.2	15.3	40.8	9.1	**
July	44.3	32.9	56.9	55.9	47.5	5.6	*
August	60.2	37.2	40.7	25.3	40.9	7.2	**
September	52.8	25.6	41.1	34.9	38.6	5.7	*
October	10.2	8.9	9.1	9.9	9.5	0.3	NS
November	11.2	11.8	10.0	10.9	11.0	0.4	NS
December	15.2	15.7	10.9	11.9	13.4	1.2	NS
SE	5.6	6.2	6.5	4.5	-	-	-
Sig.	**	**	**	**	-	-	-

*SE, standard error; NS, non-significant; *, P<0.05; **, p<0.01*

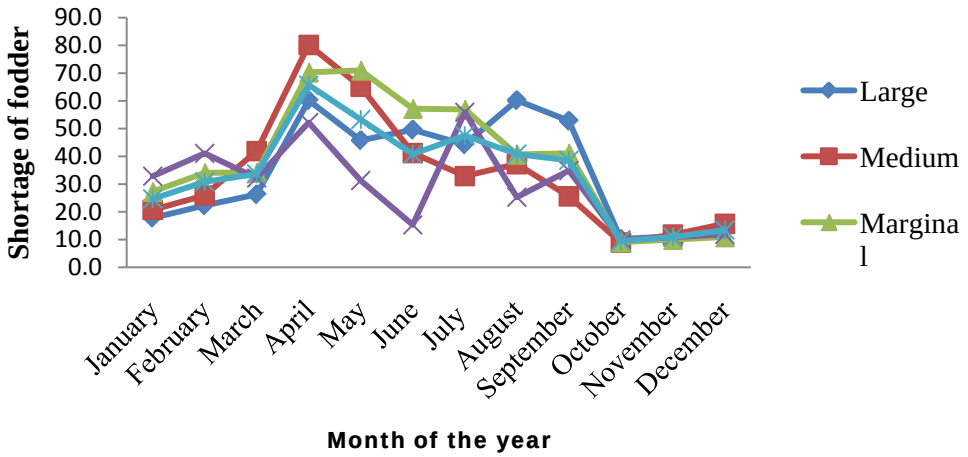

Figure 3. *Year round shortage (% of requirements) of feed according to categories of farmers*

It was observed that during April (Figure 3), shortage of feeds were 60.2% for the large farmers, 80.2% for the medium farmers, 70.3% for the marginal farmers and 52.2% for the landless farmer's. At that period the farmers in the medium category faced highest shortage of feed although the farmers in landless category were with the reverse condition. On the other hand, the farmers of all category faced a little shortage of cattle feed during October to November and the figure was only around 10%. At that period the farmers of all categories might have managed the byproducts of paddy field, hence, feed shortage was minimized.

Cultivation of fodder

Farmers in the study area usually did not grow fodder crops for their cattle. They had no desire to cultivate fodder at all. However, after long motivation a few number of medium category farmers (21%) started to grow fodder like Napier in the high fallow land and German in the water lodging condition (Table 2). It was found that the tendency for growing non-

legume fodder crops differed significantly (P>0.01) among the farmers of all categories.

Table 2. Types of fodder cultivated according to farm category

Type	Type of farmer				Sig.
	Large	Medium	Marginal	Landless	
A	15	7	4	2	**
B	2	1	2	1	NS
C	5	3	1	1	NS
D	78	89	93	96	NS

*A, non-legume crop; B, legume crop; C, high-yielding grass; D, not cultivate; Large (>1.50 acre); Medium (>1.0-1.5 acre); Marginal (>0.5-1.0 acre); Landless (>0-0.5 acre); NS, non-significant; **, p<0.01*

Dynamics of feed availability

It was found that rice straw was available mostly year round. Green road side grasses also were found parallel with it but to a lesser amount. German and some other local grasses were found during rainy season (Table 3).

Cultivation of crops/paddy

Most of the farmers were cultivating their land three times a year (i.e. Aus, Amon and Boro) and a few of them cultivated two times (i.e. Aus and Amon) due to lack of irrigation facility and prevalence of flood.

Table 3. Dynamics of feed availability in the study areas

Available Feeds	Availability period
Ghata khor, Phul khor, Dhan khor, Phuti khor, German	Mid May to mid October
Helencha/Maloncha shak, rice straw, road side grasses	Year round
Napier/HYV grass	Occasionally

Productive performance of RCC cows

Lactation length & milk yield:

The daily average milk yield of RCC was 1.9 to 2.3 liters/cow/day (Table 4) which was similar (1.8 to 3.2 liters/cow/day) to the report of Habib et al. (2003), Azizunnessa et al. (2010), Bag et al. (2010) and Habib et al. (2010). Khan et al. (2000) also reported the closer lower values of daily milk yield both in farm (2.0±0.63) and in rural condition (1.8±0.9). The average lactation length of RCC cow was 243.1±25.2 days (Table 4) which was higher than the reports of Bag et al. (2010) as 210.12±7.59 days, Azizunnesa et al. (2010) as 238.8 days and Khan et al. (2000) reported as 214.7 ± 21.8 days. Mufti et al. (2009) reported the closer values of lactation length of RCC at farm condition (230.6±23.9 days) whereas Habib et al. (2003) and Habib et al. (2010) also reported a higher lactation length of RCC at farm condition (261.1±14 days) and 259.6±6.2 days respectively.

The total milk yield of RCC cows in 1^{st}, 2^{nd}, 3^{rd} and 4^{th} lactation were 480.4±136.8, 518.2± 78.6, 548.8±128.3 and 568.0±189.4 kg, respectively. The highest lactation yield was found in 4^{th} lactation (568.0±189.4 kg) and lowest was in 1^{st} lactation (480.4±136.8 kg). The average lactation yield of RCC cow was 528.9±131.9 kg per lactation. This result is quite close with Habib et al. (2003) who reported the lactation yield of RCC cow as 661.6±39.8 kg/lactation. Hossain and Routledge (1982) found lactation yield of local cows as 213.0 kg under village conditions, which is lower than that of the present study.

Reproductive performance of RCC cows

Age at First Service

The average age at first service of RCC was 2.7±1.7 years (Table 6) which was very much close with the findings of Azizunnesa et al. (2010) as 32.2 months, Bag et al. (20100) as 32.42 months and Ashraf (1998) as 2.6 years for indigenous cattle and was lower than the findings Ali (1994) as 3.5 years and Kamal (2010) as 1216±121.6 days.

Gestation length

The average gestation length of RCC was as 279.9±5.3 days, which was similar to the report of Khan et al. (1999), Habib et al. (2003), Habib et al. (2010) and Azizunnesa et al. (2010) as 282, 287, 282 and 280 days, respectively. The findings of the present study were higher than that of Kamal (2010) and Bag et al. (2010) as 283.69±11.20 and 283±7.53 days, respectively.

Table 4. Lactation length (day), milk yield per day (kg) and total milk yield per lactation (kg) in RCC cows

Characters	Lactation Number				Average
	1st	2nd	3rd	4th	
Milk yield per day	1.9±0.4	2.1±0.1	2.3±0.4	2.3±0.6	2.14±0.4
Lactation length	238.2±25.4	239.2±32.4	247.8±19.9	247.0±23.0	243.1±25.2
Total milk yield	480.4±136.8	518.2±78.6	548.8±128.3	568.0±189.4	528.9±131.9

Age at first calving

Average age at first calving of RCC was reported as 42±1.8 month which was closer to the findings of Bag et al. (2010), Habib et al. (2010), Ghose et al. (2004) and Mason and Buvanendran (1982).

Calving interval

The calving interval of RCC cows was 14±1.2 month similar to Non-descript *Deshi* (13-15 months) and lower than crossbred cows (14-16 months). The calving interval of RCC cows was very close to the findings of Habib et al. (2010), Azizunnesa et al. (2010), Kamal (2010), Bag et al. (2010), Alam et al. (1994) and Habib et al. (2003) as 13.6 to 14.50 months.

Table 5. Reproductive performance of RCC in the project area

Reproductive traits	Mean	SE
Age at first service (years)	2.7	1.7
Gestation length (days)	279.9	5.3
Age at first calving (months)	42	1.8
Calving interval (months)	14	1.2
Birth weight (kg)	14.5	0.8
Weaning weight (kg)	64.6	2.5

Birth Weight

The average birth weight of the RCC calf was 14.5±0.8 kg which was lower than that of 16.67 and 16-17 kg reported by Habib et al. (2003) and Khan et al. (2000) respectively.

Weaning weight

The average weaning weight of RCC calf was 64.6±2.5 kg that was lower than that of 57.0 kg reported by Rabeya et al. (2009).

Conclusion

Most of the RCCs are reared by the marginal category of the farmers. The existing feeding and rearing practices of RCC were very fragile. The shortage of feeds and fodder for RCC during the period from May to September was severe. At that period they usually offered tree leaves to their cattle. It could therefore be recommended that the persistency of production and length of lactation of RCC may be improved through nutritional management and interventions at the said critical time of year and production cycle.

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