

A socio-economic study on Red Chittagong Cattle (RCC) farmers in selected upazilas of Chittagong district

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Abstract

This study was conducted to identify the existing socio-economic status and to know the present condition of RCC population, their management system, prevalence of diseases and income from RCC and other sources. Results showed that the RCC farmers have an average landholding of 0.89 ± 0.09 and it varied from 0.22 ± 0.01 acres for landless to 13.63 ± 4.63 acres for large farms. The distribution of land was found uneven among farm categories. The average size of family members was 4.98 ± 0.11 per farm and 67.34% of them were in the active age group of 18-57 years. The main occupation of the community farmers were agriculture (51.96%) followed by service (21.75%) and business (19.94%). On average the highest (33.55%) of family literacy prevailed in primary education. The average RCC herd size per farm was 1.70 ± 0.04 and varied from 1.50 ± 0.50 in large to 1.78 ± 0.06 in landless farms and no relationship ($r^2 = 0$) was found with landholdings. For raising RCC the participation women was (36.00%) and it was found the highest (42.52%) in landless farms. Only 7.09% of the farmers were found cultivating fodder and of the farmers 77.78% cultivated napier and 22.22% german grass. The most prevalent diseases reported by the farmers were Foot and Mouth Disease (FMD) (26.20%) and worm (21.13%). The average mortality of RCC was observed 2.12%. The age group proportional mortality showed that mortality was the highest for calf (55.56%), followed by growing animals (22.22%) and adult (22.22%) and death of animals was highest (55.56%) in rainy season. Only 29.44% of farmers reported to vaccinate their cattle against some viral and bacterial diseases and it was highest against FMD (53.43%) followed by BQ (28.92%) and Anthrax (17.65%). Annual average gross income per farm from different sources was Tk 128016 and it varied from Tk 80618 to Tk 847500 for different farm categories. Average annual income from RCC source was calculated to be Tk 16412 and it varied from Tk 2500 for large to Tk. 28598 for small farms.

(Key words: RCC farmers, socio-economic status, upazila)

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Introduction

The Red Chittagong cattle (RCC) have been identified as one of the improved and promising variety of domestic animal genetic resource mostly localized in the southern regions of the country particularly in Chittagong, Rangamati, Cox's Bazar, Naikhongchari, Feni and Laksmipur districts of Bangladesh with higher concentration in the eastern plain land area of Chittagong district. Though RCC is recognized as potential type or variety (Manson, 1988), it has its own distinct phenotypic characteristics with physical fitness and superiority in respect of productive and reproductive performances (Hossain, 2005; Habib *et al.*, 2003; Khan, *et al.*, 2000; Akhter, *et al.*, 2002 and 2004; Hossain, *et al.*, 2006; Mostari, *et al.*, 2007; and Bhuiyan, *et al.*, 2007). But the number of this type of potential cattle in its breeding tract has been declining (Hossain *et al.*, 2006) due to indiscriminate and unplanned breeding and extensive use of artificial insemination using exotic and other native cattle and is endangered and on the verge of extinction. To save this potential type of cattle from extinction a 5 (Five) year national program entitled "Red Chittagong Cattle Breed Improvement and Conservation" has been implementing for improvement, conservation and development of RCC as a dairy breed since July/2006. The project has been implemented in five upazilas (Anwara, Chandanaish, Potia, Rawzan and Satkania) of Chittagong district. This study was undertaken to investigate the existing socio-economic aspect of RCC farmers, present condition of RCC population and distribution pattern, management systems, prevalence of diseases and income from RC and other sources.

Materials and Methods

This study was conducted in five upazilas (Anwara, Chandanaish, Potia, Rawzan and Satkania) of Chittagong district. A survey was conducted on 250 RCC raising farm households taking 50 from each selected upazila. Ten villages from each of the selected upazila and from each village 5 RCC raisers were selected considering concentration of RCC population. These 250 RCC raising households were registered with a view to establish a "RCC Farmers' Community" in each upazila for conservation and development of RCC *in-situ*. Data were collected from these selected farmers with a pre-tested survey schedule contained information on socio-economic condition, the existing RCC population, management systems and herd health. Direct interview method was used for collection of data. The survey was conducted during March to September, 2008. The RCC raising farmers were grouped into four categories depending on landholdings: large (above 7.5 acres), medium (2.50-7.49 acres), small 0.51-2.49 acres) and landless farms (0.0-0.50 acres). There were 2 large farms, 8 medium farms, 113 small farms and 127 landless farms

in community group. The age group distribution was carried out considering before schooling (<6 years), growing up (6 to 17 years), adult (18 to 57 years) and old age (>57 years). Data were analyzed using computer package SPSS 16 (SPSS 16.0 for Windows, IBM SPSS Inc., (2009).

Results and discussion

Socio-economic status of the Community farmers

The socio-economic characteristics of the RCC community farmers are presented in Table 1. The average size of landholdings per farm varied from 0.22±0.01 acres in landless farm to 13.63±4.63 in large farm with an average of 0.89±0.09 acres for all farm households. The distribution of land was found skewed irrespective of farm sizes. Average size of family per household was 4.98±0.11 which seemed slightly higher than the national average of 4.80 (Population Census, 2001). Average size of family per household varied from 4.67±0.15 in landless farm to 7.25±1.05 in medium farm. A positive relation was found with size of family and landholdings. The per cent of male headed households was 94.40 and the principal occupation was agriculture (51.96%) followed by service (21.75%) and business (19.94%).

Table 1. : Socio-economic status of RCC rearing farmers by farm size

Category of farms	No. of farm	Land holding (acre)	No. of family members	Male head (%)	Occupation (Percentage)					
					Agriculture	Business	Service	Agriculture & service	Service & business	Agriculture & business
Large	2 (0.80)	13.63±4.63 (12.25)	6.50±0.50	100	20.00	40.00	20.00	0.00	0.00	20.00
Medium	8 (3.20)	3.94±0.35 (14.18)	7.25±1.05	100	53.33	13.33	33.33	0.00	0.00	0.00
Small	113 (45.20)	1.20±0.05 (61.05)	5.13±0.16	92.04	43.31	24.20	25.48	1.91	1.27	3.82
Landless	127 (50.80)	0.22±0.01 (12.52)	4.67±0.15	96.06	61.69	15.58	16.88	0.65	0.00	5.19
All farmers	250 (100)	0.89±0.09 (100)	4.98±0.11	94.40	51.96	19.94	21.75	1.21	0.60	4.53
Level of significance		P<0.01	P<0.01	P<0.01	P<0.05	P>0.05	p>0.05	P>0.05	P>0.05	P>0.05

Figures in parentheses are percentages

Family literacy of the RCC community farmers

Table 2 showed the family literacy of the RCC Community farmers. The per cent of male and female members constituted 54.57% and 45.43%, respectively. Of the male members, the per cent of infant, illiterate, primary level, secondary level, Secondary School Certificate (SSC) and Higher Secondary Certificate (HSC) and Degree and above level were 2.83%, 6.63%, 17.62%, 12.05%, 12.93%, and 2.51%;

and for female these were 2.83%, 7.84%, 15.93%, 8.08%, 9.70%, and 1.05%, respectively. The proportion of male and female members in Primary level increased with decrease in farm size. But in Secondary level it increased with the increase in farm size. This situation may be explained by the fact that the incentives of government for poor students encouraging them for participation in school. However, they are dropped-out after Secondary level. This trend would help eradicating illiteracy and in turn economic development of the country.

Table 2: Family literacy of the community farmers

Category of farms	Male (percentage)							Female (percentage)							
	Infant	Illiterate	Primary level	Secondary level	SSC and HSC	Degree and above	Total	Infant	Illiterate	Primary level	Secondary level	SSC and HSC	Degree and above	Total	
Large	0.00	0.00	7.69	23.08	23.08	30.77	84.62	0.00	0.00	7.69	0.00	7.69	0.00	15.38	
Medium	1.72	1.72	8.62	6.90	18.97	10.34	48.28	3.45	1.72	12.07	1.72	31.03	1.72	51.72	
Small	2.26	4.52	17.39	14.43	15.65	2.43	56.70	2.78	6.26	12.87	8.70	10.96	1.74	43.30	
Landless	4.19	7.76	17.61	11.53	10.69	1.47	53.25	2.94	9.64	17.61	9.43	6.71	0.42	46.75	
All farms	2.83	6.63	17.62	12.05	12.93	2.51	54.57	2.83	7.84	15.93	8.08	9.70	1.05	45.43	
Level of significance	P>0.05	P>0.05	P>0.05	P<0.05	P>0.05	P<0.01	P<0.01	P>0.05	P>0.05	P>0.05	P>0.05	P>0.05	P<0.01	P>0.05	P<0.01

Age group distribution by category of farms

Table 3 showed the distribution of family members by age group. The per cent of family members below 6 years, 6-17 years, 18-57 years and above 57 years were 6.05, 21.98, 67.34 and 4.64, respectively for all farm groups. The highest per cent (67.34%) of family members in active age group (18 to 57 years) implied a positive sign of engaging them in different income earning activities for the family.

Table 3.: Distribution of family members according to age and farm categories

Age group	Large (%)			Medium (%)			Small (%)			Landless (%)			All categories (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Below 6 years	0.00	0.00	0.00	1.72	3.45	5.17	2.53	2.73	5.27	3.67	3.23	6.90	3.02	3.02	6.05
6-17 years	0.00	0.00	0.00	8.62	12.07	20.69	11.30	10.33	21.63	11.0	11.86	22.86	10.89	11.09	21.98
18-57 years	84.62	15.38	100	32.76	31.03	63.79	38.38	27.67	66.03	36.66	31.48	68.14	37.90	29.44	67.34
Above 57 years	0.00	0.00	0.00	6.90	3.45	10.34	4.48	2.53	7.01	1.29	0.43	1.72	3.02	1.61	4.64
All age group	84.62	15.38	100	50.0	50.0	100	56.72	43.28	100	52.59	47.41	100	54.57	45.43	100

Structure of RCC herd

The distribution of RCC population according to farm categories is presented in Table 4. The herd size was the highest in landless farm (1.78 ± 0.06) followed by medium (1.63 ± 0.18), small (1.62 ± 0.07) and large (1.50 ± 0.50) farm with an average of 1.70 ± 0.04 for all farm. The average number of RCC per farm was seemed to be higher than the result (1.47) observed by Mostari *et al.* (2006) and lower than the herd size (2.48 ± 1.06) reported by Akter *et al.* (2002).

Table 4 : Distribution of RCC population according to farm categories

Category of farms	Milking cow	Pregnant cow	Dry cow	Breeding bull	Heifer	Growing bull	Bullock	Male calf	Female calf	Total no. of RCC
Large	0.50 ± 0.50	0.50 ± 0.50	0.00	0.00	0.50 ± 0.50	0.00	0.00	0.00	0.00	1.50 ± 0.50
Medium	0.75 ± 0.16	0.13 ± 0.13	0.13 ± 0.13	0.00	0.13 ± 0.13	0.13 ± 0.13	0.00	0.13 ± 0.13	0.25 ± 0.16	1.63 ± 0.18
Small	0.50 ± 0.05	0.48 ± 0.05	0.04 ± 0.02	0.04 ± 0.02	0.23 ± 0.04	0.06 ± 0.02	0.00	0.07 ± 0.02	0.20 ± 0.04	1.62 ± 0.07
Landless	0.64 ± 0.04	0.34 ± 0.04	0.04 ± 0.02	0.02 ± 0.01	0.17 ± 0.03	0.03 ± 0.02	0.01 ± 0.01	0.20 ± 0.04	0.35 ± 0.04	1.78 ± 0.06
All categories	0.58 ± 0.03	0.40 ± 0.03	0.04 ± 0.01	0.02 ± 0.01	0.20 ± 0.03	0.05 ± 0.01	0.00	0.14 ± 0.02	0.28 ± 0.03	1.70 ± 0.04
Level of significance	$p > 0.05$	$p > 0.05$	0.00	0.00	$p > 0.05$	0.00	0.00	$p > 0.05$	$p > 0.05$	$p > 0.05$

Types of animal sheds

The housing arrangement of RCC is presented in Table 5. It revealed that 38.00% farmers kept their cattle in straw-roofed, 44.80% in tin-roofed and 17.20% in coarse mat-made animal houses. Large farmers usually made their animal shed by tin-roof and that of straw roofed and coarse-mat made animal housing were predominant among small and landless farmers. About 67% farmers kept their animals in-group and 33% separately considering the age of animals. The per cent of farmers keeping animals separately were highest in large (100%), followed by medium (87.5%), small (39.82%) and landless (22.05%) farm.

Table 5: Housing arrangement for cattle

Category of farms	Percentage of respondents			Keeping cattle in shed	
	Straw made	Tin made	Coarse mat made	In group	Separately by age group
Large	0.00	100.00	0.00	0.00	100.00
Medium	12.50	87.50	0.00	12.50	87.50
Small	36.28	52.21	11.50	60.18	39.82
Landless	41.73	34.65	23.62	77.95	22.05
All categories	38.00	44.80	17.20	67.20	32.80

Participation of family members in raising RCC

The involvement of family members in raising RCC cattle is presented in Table 6. The family members participated in cattle management practices including cleaning of animal shed, supplying feed and water to cattle, taking care of pregnant animals, collection of milk and nursing diseased animal, etc. The participation of family members in different management activities was the highest for women (36.00%), followed by men (35.60%) and children (28.40%). It is evident that participation of men in cattle raising increased with the increase in farm size but that of women increased with decrease in farm size. This can be explained by the fact that in small and landless households men are engaged in other income earning activities for livelihood and these type cattle is so docile that they are easy to handle for the women. The participation of family members in rearing RCC varied ($p < 0.05$) with farm categories.

Table 6: Participation of family members for rearing cattle

Category of farm	Percentage of respondents		
	Men	Women	Children
Large	100.00	0.00	0.00
Medium	62.50	12.50	25.00
Small	39.82	30.97	29.20
Landless	29.13	42.52	28.35
All farms	35.60	36.00	28.40
Level of significance	$P < 0.05$	$P < 0.05$	$p > 0.05$

Feeding roughages

The RCC farmers were asked how they met the requirement of dry and green roughages, and concentrate for their cattle. Their responses are presented in Table 7. It can be seen from the table that roughage requirements were met from two sources, dry roughage from rice straw and green roughage from fallow land/road side grass. Of the total roughage requirement, 46.04% were met from rice straw and 53.96% from fallow land/road side grass. The higher percentage of roughage from green grass was due to the fact that farmers used to graze their cattle from morning to evening covering 7 to 8 hours daily. After return to homestead the animals were supplied rice straw. Similar result was observed by Akhter, *et al* (2002). To meet concentrate requirement, the farmers supplied wheat bran, rice polish, til-oil cake and mixture of all these were 32.15%, 64.01%, 1.47% and 2.36%, respectively. These responses were mutually inclusive. The per cent of farmers supplied wheat bran was found the highest in landless farms (35.64%), rice polish

in large farms (100%), til oil cake in medium farms (9.09%) and mixture of all these (2.63%) in small farms..

Table 7 : Feeding of roughages and concentrates

Category of farms	Percentage of respondents		Total	Percentage of respondents				Total
	Rice straw	Fallow land/road side grass		Wheat bran	Rice polish	Til-oil cake	Mixture of all	
Large	66.67	33.33	100	0.00	100	0.00	0.00	100
Medium	53.34	46.66	100	18.18	72.73	9.09	0.00	100
Small	44.32	55.68	100	29.61	65.79	1.97	2.63	100
Landless	46.84	53.16	100	35.64	61.49	0.57	2.30	100
All farms	46.04	53.96	100	32.15	64.02	1.47	2.36	100

Feeding concentrate

Feeding concentrate to different types of animals is shown in Table 8. The quantity of concentrate supplied per animal was the highest for milking cow (1.19 kg), followed by pregnant cow (0.91kg), bull (0.28 kg), heifer (0.22 kg) and calf (0.06kg) and the quantity of concentrate supplied increased with the increase of farm size. This result agreed with the observation of Mostari, *et al* (2006). About 47% of farmers opined that the quantity of concentrate supplied to animals were sufficient, 40.60% opined less than requirement and 2.4% opined more than requirement and 10% did not respond. It revealed from the responses that most of the farmers did not have any idea about the quantity of supplement feed requirement to cattle.

Table 8 : Feeding concentrate to different types of animal

Category of farms	Feeding concentrate to types of animal (kg/animal)						Adequacy of supplied concentrate (percentage of respondents)			
	Milking cow	Pregnant cow	Bull	Bullock	Heifer	Calf	Less	More	Sufficient	No answer
Large	2.25	0.00	0.00	0.00	0.75	0.25	50.00	0.00	50.00	0.00
Medium	1.69	0.25	0.19	0.00	0.31	0.13	62.50	0.00	37.50	0.00
Small	1.27	0.97	0.25	0.00	0.23	0.06	45.13	2.65	45.13	7.08
Landless	1.06	0.93	0.32	0.21	0.20	0.04	47.24	2.36	37.01	13.19
All categories	1.19	0.91	0.28	0.10	0.22	0.06	46.60	2.40	40.00	10.00

- Adequacy meant for whether the supplied concentrate were to the requirement

Fodder cultivation

The per cent of farmers cultivated fodder was the highest for large (50%), followed by medium (37.50%), landless (7.09%) and small (4.42%) farmers with an average of 7.20% and the area devoted to fodder cultivation per farm was 0.007 acres (Table 9). The area under fodder cultivation was 0.33, 0.12, 0.004 and 0.004 acres for large, medium, small and landless farms, respectively. The area under fodder cultivation and percentage of farmers cultivating fodder seemed very low to meet the green grass requirement for the animals in the study area. Napier and German were the two types of fodder cultivated by the farmers. The per cent of farmers cultivated Napier and German were 77.78% and 22.22%, respectively.

Table 9 : Cultivation of fodder

Category of farms	Number of farms	Percentage of farmers cultivated fodder	Average area under fodder cultivation (acre)	Cultivated fodder (percentage of respondents)	
				Napier	German
Large	2	50.00	0.33	0.00	100.00
Medium	8	37.50	0.12	66.67	33.33
Small	113	4.42	0.004	80.00	20.00
Landless	127	7.09	0.004	88.89	11.11
All categories	250	7.20	0.007	77.78	22.22

Annual income from livestock and other sources

The RCC raising farmers were also engaged in other occupation. The other sources of household income of the RCC raising farmers were business, agriculture, service and other. The annual average household income was estimated to be Tk. 128194 of which the contribution of livestock was 17.59% (Table 10). The share of livestock income to total household income for large, medium, small and landless farms were 2.95% 4.71%, 15.05% and 28.62%, respectively. It is noticeable that income from livestock source increased with decrease in farm size. The annual gross income were Tk. 847500, Tk. 455850, Tk. 145343 and Tk. 80968 for large, medium, small and landless farms. Income from different sources differed ($p>0.05$) significantly with farm categories.

Table 10: Annual income from livestock and other sources

Source of income	Farm category					Level of sig.
	Large	Medium	Small	Landless	Overall	
Milking cow	25000.00 (2.95)	5850.00 (1.28)	10424.47 (7.17)	13021.65 (16.08)	11714.06 (9.14)	p>0.05
Cattle fattening	0.00 (0.00)	14125.00 (3.10)	9579.65 (6.59)	8405.57 (10.38)	9052.03 (7.06)	p>0.05
Goat rearing	0.00 (0.00)	1428.57 (0.31)	1436.28 (0.99)	1105.51 (1.37)	1255.82 (0.98)	p>0.05
Chicken rearing	0.00 (0.00)	250.00 (0.05)	433.63 (0.30)	640.16 (0.79)	529.20 (0.41)	p>0.05
Total from livestock source	25000.00 (2.95)	21475.00 (4.71)	21874.03 (15.05)	23172.90 (28.62)	22546.09 (17.59)	p>0.05
Business	625000.00 (73.75)	31250.00 (6.86)	38446.43 (26.45)	12566.93 (15.52)	29726.91 (23.19)	P<0.01
Agriculture	175000.00 (20.65)	248125.00 (54.43)	34991.15 (24.07)	29314.96 (36.21)	40048.00 (31.24)	P<0.01
Service (home and abroad)	22500.00 (2.65)	155000.00 (34.00)	48274.34 (33.21)	15818.90 (19.54)	34996.00 (27.30)	P<0.01
Other	0.00 (0.00)	0.00 (0.00)	2097.35 (1.44)	94.49 (0.12)	996.00 (0.78)	p>0.05
Total from other sources	822500.00 (97.05)	434375.00 (95.29)	123469.03 (84.95)	57795.28 (71.38)	105648.00 (82.41)	P<0.01
Total	847500.00 (100)	455850.00 (100)	145343.05 (100)	80968.17 (100)	128194.09 (100)	P<0.01
Level of significance	p>0.05	p>0.05	p>0.05	p>0.05	P<0.01	

Figures in the parentheses are percentages

Annual income from RCC sources

Income from RCC sources is shown in Table 11. The average annual income for large, medium, small and landless farm from RCC sources were Tk. 2500, Tk. 10663, Tk. 28598 and Tk. 18873, respectively with an average of Tk. 16412. For all farm categories the highest income came from sale of bull (42.58%), followed by sale of heifer (29.70%), milk (23.15%) and dung (4.57%). These shares of income from RCC sources varied (p<0.05) with farm categories.

Table 11 : Income from RCC

Sources income	Large	Medium	Small	Landless	All farm categories	Level of significance
Sale of milk	2500±2500 (100)	2450±604 (5.49)	14000±787 (22.60)	10725±984 (25.33)	9970±631 (23.15)	P<0.05
Sale of bull	0.00±0.0 (0.00)	13750±2500 (61.39)	5807±1161 (41.51)	5437±1097 (42.77)	5607±779 (42.58)	P<0.05
Sale of heifer	0.00±0.0 (0.00)	5000±2500 (32.31)	2189±447 (33.34)	1913±556 (27.08)	1913±356 (29.70)	P<0.05
Sale of dung	0.00±0.0 (0.00)	125±62 (0.81)	765±187 (2.55)	798±291 (4.82)	587±171 (4.57)	P<0.05
Total income	2500±2500 (100)	10663±4961 (100)	28598±1358 (100)	18873±1244 (100)	16412±909 (100)	P<0.05

Figures in the parentheses are percentages

Prevalence of diseases to RCC

Table 12 showed the prevalence of various diseases in RCC. The major diseases of RCC reported by the farmers was the highest for Foot and Mouth Disease (FMD) (26.20%) followed by worm (21.13%), Black Quarter (BQ) (7.04%), diarrhoea (6.48%), pneumonia (5.63%), non-conception (5.07%), Anthrax (4.23%), bloat belly (3.38%), Haemorrhagic Septicaemia (HS) (2.54%), anestrus (1.41%), blood dysentery (1.13%), mastitis (0.56%) and ticks and mites (0.56%). It revealed that FMD and worm are the most prevalent diseases in RCC. It was observed that about 30% farmers used to vaccinate their cattle regularly against some bacterial and viral diseases and 70% did not. The per cent of farmers vaccinated their cattle against FMD, BQ and Anthrax were 53.43%, 28.92% and 17.65%, respectively. It revealed that FMD was the most prevalent disease in RCC.

Table 12: Prevalence of diseases to RCC

Name of diseases	Percentage of respondents				
	Large	Medium	Small	Landless	All farms
Pneumonia	0.00	0.00	5.26	6.55	5.63
FMD	0.00	14.29	22.22	31.55	26.20
Black Quarter	0.00	7.14	6.43	7.74	7.04
Anthrax	0.00	0.00	4.09	4.76	4.23
Bloat belly	0.00	0.00	5.85	1.19	3.38
Mastitis	0.00	0.00	0.58	0.60	0.56
HS	0.00	0.00	1.75	3.57	2.54
Diarrhoea	0.00	14.29	6.43	5.95	6.48
Blood dysentery	50.00	7.14	1.17	0.00	1.13
Anestrous	0.00	0.00	1.75	1.19	1.41
Non-conception	0.00	14.29	2.92	6.55	5.07
Worm	50.00	35.71	26.32	14.29	21.13
Ticks and mites	0.00	0.00	0.58	0.60	0.56
Did not response	0.00	7.14	14.62	15.48	14.65
Vaccinated regularly	0.00	37.50	23.89	37.50	29.50
Vaccination of animal against diseases					
FMD	0.00	50.00	64.79	34.88	53.43
Black Quarter	0.00	50.00	23.94	32.56	28.92
Anthrax	0.00	0.00	11.27	32.56	17.65

Death of RCC by age and season

Death of RCC according to age is presented in Table 13. A total of 9 cattle of different ages died in the reference year. Mortality of RCC varied from 0.00% to 2.21% across the farm size with an average of 2.12%. Of the animal died, the death was found highest for calf (55.56%), followed by growing animals (22.22%) and adult (22.22%). It revealed that death of RCC decreased with increase in age. Similar trend was observed by Huque *et al.*, (2009-2010). The death of animals was found to be the highest in rain (55.56%) followed by summer (22.22%) and winter (22.22%) season.

Table 13 : Death of RCC by age and season

Category of farms	Number of RCC reared	Mortality (%)	Age group proportional mortality (AGPM*) (%)			Seasons of occurrence (percentage of respondents)		
			Calf	Growing	Adult	Summer	Rain	Winter
Large	3	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.00	0.00	0.00
Medium	13	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.00	0.00	0.00
Small	183	4 (2.19)	3 (33.33)	1 (11.11)	0 (0.00)	44.44	0.00	0.00
Landless	226	5 (2.21)	2 (22.22)	1 (11.11)	2 (22.22)	11.11	22.22	22.22
All categories	425	9 (2.12)	5 (55.56)	2 (22.22)	2 (22.22)	55.56	22.22	22.22

Figures in the parentheses are percentages

*AGPM: Age group proportional mortality rate, i.e., death specific age group in a year per total deaths in the same year, expressed per 100 (Jabbar and Green, 1983)

Conclusion

The present study focused on the socio-economic condition of the the RCC community farmers. Results showed that the small and landless households constituted 96% of the total households who possessed 74% of landholdings and 96% of the RCC population. A skewed distribution of land was evidenced. Practice of improved feeding technology and routine vaccination were not found. Participation of women in raising RCC was observed higher in small and landless farms. Therefore, to make “Development of RCC through conservation” program a success, spontaneous participation of small and landless farmers is needed. Therefore, necessary supportive activities such as motivation, AI services, veterinary services, supplying fodder cuttings etc. to be made available to these farmers.

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To
The Editor
Bangladesh Journal of Livestock Research
Savar, Dhaka 1341.

Subject: Submission of revised manuscript entitled “A Socio-economic study on Red Chittagong Cattle (RCC) Farmers in selected upazilas of Chittagong district

Sir,

Please find herewith 2 (two) copies of manuscript entitled “A Socio-economic study on Red Chittagong Cattle (RCC) farmers in selected upazilas of Chittagong district” revised as per comments of the Reviewer for your kind consideration and necessary action.

From the Title of the paper the word ‘community’ is omitted

1. From key words: ‘Community’ is dropped.
2. In Introduction projected period has been mentioned.
3. ‘RCC community’ has been changed as RCC farmers’ community.
4. p.3 Table 1, 5th column corrected.
5. p.6 Table 5, 2nd column deleted.
6. p.7 Correction are made.
7. p. 9. Correction are made.
8. p.10. corrected as per suggestion.
9. P. 11. References are incorporated.
10. P.12. All comments have duly been addressed.
11. In the references the published journal have been written ‘*italic*’.
12. All comments are duly incorporated.

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