

COMPERATIVE STUDY ON THE COST BENEFIT BETWEEN INDIGENOUS AND CROSS BRED COWS REARED IN RURAL AREA OF DINAJPUR DISTRICT

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Abstract

A comparative study on cost benefit analysis of crossbred and indigenous cows reared under the small holder dairy was conducted in Dinajpur district of Bangladesh. A total of 70 dairy cows (20 crossbred and 50 indigenous) from rural level small and marginal dairy farmers (1-3 cows) were selected. Relevant information from the individual milk producers have been collected through personal interrogation method with the help of a structured data collection questionnaire prepared for the study. The cost involvement for feed, treatment and medication of crossbred cows were significantly higher ($P < 0.01$) than the indigenous dairy cows. The per day milk production was found 1.86 ± 0.57 liter in indigenous cow whereas 5.94 ± 3.49 liter was in crossbred cows and income level from milk yields of crossbred cows were 3.19 times higher than the indigenous cows. The cost benefit ratio of rising crossbred and indigenous dairy cows were 1.19 and 1.26, respectively. The current rearing cost of crossbred cows is 2.71 times higher than indigenous cows. Considering the other traits it may be concluded that the raising of crossbred cows was more economic than the raising of indigenous cows. Since crossbred cows were more economical and gave higher yield than the indigenous cows inclusion of a few crossbred cows can increase the income of a dairy entrepreneur which improve the livelihood and provide round the year employment of its family labour.

Key words: Cross bred cows, Indigenous cows, Income, expenditure, Cost benefit ratio

Introduction

The cattle of Bangladesh are mostly of indigenous types (*Bos indicus*) with few cross-bred along with some purebreds such as Sahiwal, Holstein etc. The number of crossbred cattle is increasing day by day with the spread of artificial insemination (AI) practices throughout the country. The milk production of indigenous cattle is low compared to improved breeds of cattle (Rahman *et al.*, 1998). The number of milking cows in Bangladesh is 3.75 million, which is 35 percent of all cattle population of Bangladesh. Of the total milking cows, only

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1.90 percent was reported to be crossbred (Rahman *et al.*, 1998). Cross-bred dairy cows can be highly productive and make a major contribution to household economies as well as providing milk packed with essential nutrients, such as protein and minerals, which are especially important in the diet of children and for expectant and nursing mothers. But dairy cows will only be productive if they receive sufficient quantities of the right sorts of foods. The challenge smallholder dairy farmers' face is to provide their cattle with a balanced diet that supplies the right quantity, quality and mix of nutrients and avoids any harmful feeds and to achieve this at the least cost using feedstuffs that are readily available. With this view the study was conducted to know the cost involvement and income in rearing crossbred and indigenous cows in rural level and to compare the cost and benefits of cross bred and indigenous cows of rural context of Dinajpur region.

Materials and Methods

The study was conducted at Dinajpur sadar upazilla and Birampur upazilla of Dinajpur district for a period of five months. A total number of 70 cows (20 crossbred and 50 indigenous approximate age 5 years) on the basis of their on going lactating period (same lactation).

Method of data collection

The data collection tools were developed in accordance with objectives of the study. It was designed in a simple manner to get accurate data. The data were collected directly from selected farmer of Dinajpur Sadar and Birampur upazilla. The farmers under the study areas were maintained the general rural livestock management system. They supported their dairy cow with a shed and scattered supplied some roughage and concentrate feeds without any influence for the trial. The twenty crossbred (Friesian \times Local, Shahiwal \times Local and Red Ctg. \times local) and fifty indigenous cows were selected for the data collections. Data were collected from the farmers of selected areas by using the format in weekly basis by the Focal Person of partner non-government organization staff and compiled to get monthly information through direct interviews. The collected data were processed by using SPSS for T test for each parameter considered in the study.

Results and Discussion

Feed cost

It is recorded that the feed cost for indigenous and crossbred cows almost same and it was 96.00 % for indigenous cow and. 95.76 % for crossbred cow (Fig. 1).

The major investment in rearing dairy cows both for indigenous and crossbred cows consist of their feed cost. Among this feed cost the amount cost involvement with concentrate and roughage feed for indigenous cows were 50.01 and 49.99% respectively where as for crossbred those were 64.92 and 35.08% respectively. This result is very close to the result obtained by Shamsuddin *et al.* (2006) who found the range of feed cost to be 52.5% to 92.1%

Cost benefit comparison between indigenous and cross bred cows

of total cost. Other results showed that feed cost for the smallholder dairying represent 58.72% (Hossain *et al.*, 2005) and 50% (Alam *et al.*, 1999), respectively.

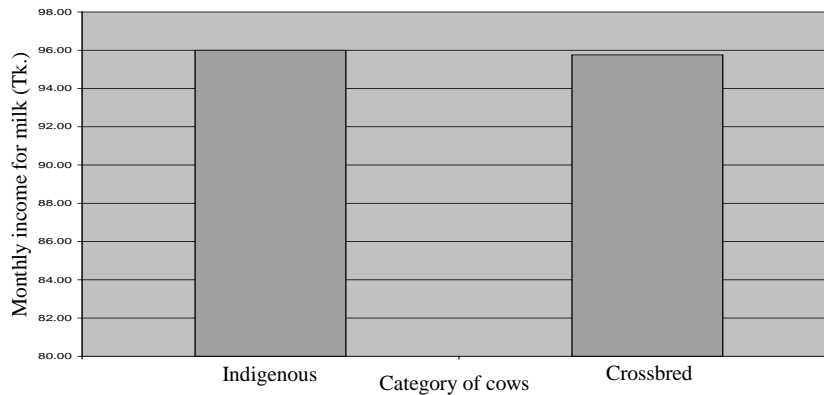


Fig. 1. Comparing the percentage of investment on feed from total monthly expenditure

Treatment cost

Crossbred cows have much susceptibility to the environmental stress and seasonal diseases but under proper management and facilitate a well ventilated barn then it resist the stress. As crossbred have a higher body (average body weight was 123.24 ± 16.46 kg for indigenous and 136.90 ± 13.51 kg for crossbred cow) weight and obviously has a greater nutritional requirement for body maintenance and production purpose. The average monthly expenditure for crossbred cows was significantly higher (Table. 1) than indigenous cows because of higher sensitivity to their highly productive cows. Average monthly treatment and medication cost for crossbred and indigenous cows were Tk. 31 ± 14.77 and Tk. 89.25 ± 25.97 for indigenous and crossbred cows respectively Ali *et al* (2000) reported the yearly treatment cost for indigenous and crossbred cows as Tk. 496.56 and Tk. 1111.80 respectively which was higher than the present findings.

Labour hours

The crossbred cows are more sensitive and susceptible to the environmental stress and diseases, so it requires little more attention in care and management than indigenous cattle. The average labour engagement on indigenous was 6.14 hours and where as for crossbred was 7.15 hours per day per cows. (Table 2). The profit per hour was Tk. 6.69 for indigenous cow and Tk. 19.59 for crossbred cows. Employment generation is 2.93 times higher in crossbred rearing than indigenous cows. Islam *et al.*, 2008, find the engagement of 11 hours labour in indigenous cows and 13 hours of labour engagement in crossbred cow which is higher than the present findings. This is most probably due to the presence of subsistence level of dairy farming in rural Bangladesh.

Milk production

The production of crossbred has recorded from 1.72 liter to 10.90 liter daily and average 5.94 liter/day where indigenous cow's milk production was 1.20 liter to 3.9 liter with an average of 1.86 liter/day (Fig. 4). Khan et al, 2001 found the average milk production of indigenous cows were ranging from 0.52 to 3.62 liter per day per cow (average 1.88 ± 0.25) where as the milk yield for crossbred cows were ranging from 1.78 liter/ cow/ day to 10.15 liter/ cow/ day with average of (average 6.02 ± 1.16) which is almost same with the present study.

Ali *et al.*, 2000 found that milk production contribute 81% of the returns from dairy cows, which is almost similar with the present findings as the present study reveals 82.32% of monthly income came from selling milk for indigenous cows and crossbred it was 93.69% (Table 2).

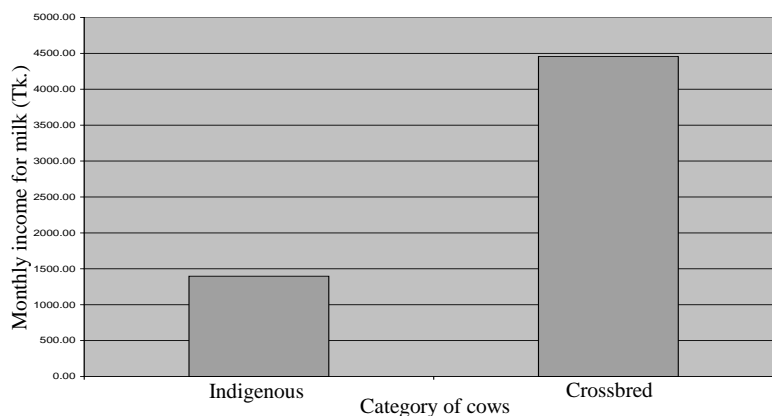


Fig. 2. Showing monthly income only comes from milk

Cow dung

In Dinajpur district the farmer effectively use bio fertilizer for improving the soil fertility in village level. Some farmer only uses the dung in agricultural field as fertilizer. So a market of this fermented dung has developed in rural areas. They are earning Tk. 300 from each cattle. Islam *et al.* (2008) found that earning from dung from crossbred and indigenous cow per day were Tk. 10.81 and Tk. 8.64 respectively and value was very close to the present findings.

Profit margin

It has been observed that monthly gross profit of crossbred and indigenous cows were Tk. 921 ± 90 and Tk. 2652 ± 13 respectively and the income from crossbred cows was 2.88 times higher than that of indigenous cows (Table 2). Rahman *et al.*, 2000 found average per day returns from indigenous dairy cows Tk. 29.42 and Tk. 29.34 in two areas which is very close to the present findings of indigenous cows.

Cost benefit comparison between indigenous and cross bred cows

Table 1. Monthly expenditure status

Parameters	Treatments	No.	Mean	Std. deviation	Std. error mean	T value & Level of Sig.
Body Weight (kg)	Indigenous	50	123.24	16.46	2.33	3.29*
	Crossbred	20	136.90	13.51	3.02	
Conc. Feed cost (Tk)	Indigenous	50	372.24	102.33	14.47	10.574**
	Crossbred	20	1308.35	611.30	136.69	
Staw/ grass cost (Tk)	Indigenous	50	372.14	70.95	10.03	12.382**
	Crossbred	20	707.02	156.26	34.94	
Total feed cost (Tk)	Indigenous	50	744.38	125.70	17.78	13.216**
	Crossbred	20	2015.37	657.37	146.99	
Percentage of monthly cost (Tk)	Indigenous	50	95.92	1.99	0.28	16.086**
	Crossbred	20	54.68	18.05	4.04	
Treatment cost (Tk)	Indigenous	50	28.92	14.76	2.09	7.297**
	Crossbred	20	66.60	28.31	6.33	
Vaccine and de-worming cost (Tk)	Indigenous	50	2.08	2.01	0.28	18.774**
	Crossbred	20	22.65	7.14	1.60	
Total treatment cost (Tk)	Indigenous	50	31.00	14.77	2.09	11.843**
	Crossbred	20	89.25	25.97	5.81	
Total Expenditure (Tk)	Indigenous	50	775.38	125.08	17.69	13.682
	Crossbred	20	2104.62	665.01	148.70	

* = means (P<0.05), ** = means (P<0.01)

Table 2. Monthly income and profit profile

Parameters	Treatments	No.	Mean	Std. deviation	Std. error mean	T value & Level of Sig.
Milk yield per day (Lit)	Indigenous	50	1.86	0.57	0.08	8.089**
	Crossbred	20	5.94	3.49	0.78	
Income from Milk (Tk)	Indigenous	50	1397.29	424.62	60.05	8.089**
	Crossbred	20	4455.75	2616.21	585.00	
Income from Dung (Tk)	Indigenous	50	300.00	0.00	0.00	ND
	Crossbred	20	300.00	0.00	0.00	
Income Total (Tk)	Indigenous	50	1697.29	424.62	60.05	8.089**
	Crossbred	20	4755.75	2616.21	585.00	
Gross profit (Tk)	Indigenous	50	921.90	391.73	55.40	5.95**
	Crossbred	20	2651.13	1980.75	442.91	
Labour Hours per day	Indigenous	50	6.14	1.14	0.16	2.916*
	Crossbred	20	7.15	1.66	0.37	
Monthly income from milk percentage	Indigenous	50	81.32	4.39	0.62	8.048**
	Crossbred	20	91.19	5.22	1.17	

ND = Not done, * = means (P<0.05), ** = means (P<0.01)

Conclusion

The study revealed that crossbred cows were more economical and gave higher yield than the indigenous cows, inclusion of crossbred cows can increase the income of a dairy entrepreneur Therefore, introduction of crossbred cows should be popularized in the rural areas of Bangladesh.

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