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Study of the Dairy Cattle Management Systems at Farmer's Level in Jessore District of Bangladesh

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Abstract: This study was conducted to know the management system, to determine cost and benefit, to identify constrains and to make recommendations for development of such small dairy farms in Jessore District. From this study, it was revealed that the milch cow per farm was 5.12 and average milk yield per day per cow was 5.78 liter. Cows were inseminated 76% by artificially and 24% by both natural and artificial means. About 68% roughage was used as dry and the rest used as green grass. Fifty four percent, 24% and 22% farms had semi pucca, kacha and pucca houses, respectively for their animals with 90% proper ventilation and 66% proper drainage system. Milking done by male 76%, female 20% and both 4%. Milk was sold to neighbors, vendors, restaurants and sweet makers. The average market price of milk per liter was Tk. 14.32. The average production cost per cow per year was Tk.. 17,790.83. Feed cost was Tk.. 14,024.54, which was 78.83% of production cost. On the basis of some problems reported by farm owners, some recommendations are made for sound dairy development in the study area.

Key word: Dairy cattle, management system, farmers' level

Introduction

Cattle are an integral part of the existing smallholder subsistence farming of Bangladesh. In this country, major portion of milk is produced by the rural households. The majority of the rural households have one or two cows, which are used for draft purposes, and milk is considered as a by-product. Some large farmers also keep separate cows in addition to draught bullocks for milk production. Poor milk production in our country indicates the depth of the requirement of raising milk production for a healthy nation. In the past, most of the researches on dairy cattle production were concentrated on the individual farm and under controlled condition. Recently some studies are being done on farm situation that are limited on the rural areas. This is undoubtedly an important site of dairy research. However, in the recent past plenty of small dairy farms have been developed in the urban area of the country. Regarding level of milk production from individual cows, these farms are higher than that of the rural area, probably because of the improved breed and management systems in the urban area. The volume of imported milk has increased over the year due to faster domestic demand. So, Bangladesh has given the priority on the development of dairying at farmers level to increase the supply of milk from small dairy farms. Hence, the present study was undertaken with the following objectives:

(i) To know the present status regarding feeding, housing, breeding, milk production, marketing etc. existing in small dairy farms.
(ii) To determine the costs and returns of dairy farms.
(iii) To identify problems of raising dairy cows and recommend farmers for better production.

Materials and Methods

The study was conducted under 8 Thanas in Jessore District, namely Sadar, Jhikargacha, Sharsha, Bagharpara, Monirumpur, Keshobpur, Chaugacha and Avoynagar, during October 1998 to February 1999. Total fifty small dairy farms of which 8 from Sadar Thana, and six from each of the rest Thanas were randomly surveyed according to objectives. A list of registered small dairy farms in Jessore District was collected from District Livestock Office, Jessore. Fifty small dairy farms were randomly selected from a total of 212 enlisted in the register. The data were collected through direct interviewing to the farm owners. To attain accurate and reliable data, care and caution were taken in course of data collection. Data collected from the farmers were compiled and tabulated. Tabulated data were arranged as percent value for easy understanding and to have definite conclusion.

Results and Discussion

Factors associated with dairy cattle management: Factors associated with dairy cattle management by the farmers are shown in Table 1. The results showed that 36% farm owner had taken dairying as main business and 65% farm owners as side business and the highest percentage (36%) of farmers had dairy farming as the principal occupation. This result contradicts to the information of Rahman (1996), where dairying was

Table 1: Factors associated with dairy cattle management system at farmer level (n=50).

Parameters	Categories	Percentage
Occupation	Dairy farming	36
	Service	16
	Agriculture	18
	Business	30
Source of money	Bank loan	12
	Own source	16
	Both	22
Monthly income (Tk..)	0-3,000	10
	3,000-5,000	34
	5,000-10,000	48
	Above 10,000	6
Type of cattle	Milch cow	40.51
	Dry cow	5.70
	Heifer	42.56
	Calf	42.56
	Bull	2.53
Type of farm houses	Nature of construction	
	Pucca	22
	Kacha	24
	Semi pucca	54
	Housing system	
	Open	-
	Closed	4
	Semi closed	96
	Ventilation	
	Proper	90
	Improper	10
	Drainage	
	Proper	66
	Improper	34
Breeding practice	Artificial insemination	76
	Both AI and natural	24
	Only natural	-

taken by 19% as main business and 81% as side business and the highest percentage (42%) of farmers had business as the principal occupation. Ali *et al.* (2000) also showed that the highest percentage (40%) of farmers had agriculture as principal occupation. Only 12% of the dairy farmers were dependent on bank loan for establishing dairy farms, 66% from their own source and 22% by bank loan as well as own source (Table 1), which is near about similar to the information of Rahman (1996) where 25, 58 and 17% of farmers were dependent on bank loan, own source and both, respectively.

It was revealed that monthly income of the owners were 0-3,000, 3,000-5,000, 5,000-10,000 and above 10,000 taka for 10, 36, 48 and 6%, respectively (Table 1). Whereas Hossain *et al.* (2004) found that monthly income were 0-3,000, 3,000-5,000 and above 5,000 taka for 11, 26 and 63%, respectively. It was observed that average number of milch cow per farm was 5.12, average number of total cattle per farm was 12.64 and percentage of milch cows was 40.51 (Table 1) and out of 632 cattle, 118 were pregnant (18.67%). According to Rahman (1996), average number of milch cow per farm was 7 and percentages of milch cows and pregnant cows were 36.38% and 13.32%, respectively. It was observed that the tendency of rearing crossbred cows at small-scale dairy farms in Jessore is increasing.

Among 50 small dairy farmers of Jessore District, 96% farmers had semi-closed house and 4% farmers had closed house (Table 1). Among these houses, 54%, 24% and 22% houses were semipucca, Kacha and Pucca, respectively (Table 1). Proper ventilation and drainage were 90% and 66%, respectively (Table 1). Hossain *et al.* (2004) found that 3, 63 and 34% houses were open, closed and semi-closed, respectively and in these houses, proper ventilation and drainage were 73 and 33%, respectively, which contradict to the present study.

It was observed that very little number of indigenous cattle found in this survey of private farm. Because, most of the farm owners used artificial insemination technique for breeding purpose, the cause of these huge numbers of crossbred dairy cow available. For this reason, a good number of Holstein Friesian, Shahiwal and Sindhi crossbred stock found in this area. The data showed that 76% cows were inseminated artificially and 24% by both naturally and artificially (Table 1). No remarkable deviation had been observed with observation made by Rahman (1996), who showed the use of artificial insemination was 75% and both artificial and natural was 25%.

Feed resources and feeding practice: Major types of feeds were rice straw, green grass, rice bran, pulses bran, till oil cake and others. The amount of concentrate and roughage feeding per milch cow per day were presented in Table 2. It was found that the farmers used concentrate of 35.39, 23.70, 14.53, 12.95, 8.28, 2.53, 2.05 and 0.63% rice bran, wheat bran, pulses bran, mustard oilcake, till oilcake, crushed rice, molasses and salt, respectively. Most of the farmers used mustard oilcake as protein supplement because of availability; nobody used fishmeal and soybean meal. Farmers used roughage of 26.41, 41.91, 18.47, 12.44 and 0.77% treated straw, untreated straw, roadside grasses, Napier grass and German grass, respectively. Farmers fed 6.33 kg concentrate and 10.45 kg roughage per milch cow per day. The main cattle feed at the study area was dry straw. One of the advantages of dairy cattle management at farmers level is that they used locally available cattle feed resources. Family members of the farmers are involved in feed processing and offering feed daily of the cattle.

Data were collected on the new feeding technologies, such as urea molasses straw, urea treated straw and urea molasses block, and are given in the Table 3. Most of the farmers (54%) did not accept any new technology. The rest of farmers accepted the above new

Table 2: Feeding resources and feeding practices by the farmers (no-50)

Source of feed and feeding system	Variables	Percentage
Source of feed	Concentrate	
Homestead	Rice bran	35.39
Non arable land	Wheat bran	23.70
Road side grass	Till oilcake	8.28
River side	Mustard oilcake	12.95
Embankment	Molasses	2.05
Play ground	Pulses bran	14.53
	Crushed rice	2.53
	Salt	0.63
Feeding system	Roughage	
Cut and carry	Treated straw	26.41
Restricted grazing	Untreated straw	41.91
Tethering	Napier grass	12.44
Stall feeding	German grass	0.77
	Road side grasses	18.47

Table 3: Acceptance of new feeding technologies to the farm owners (n-50)

Technologies	Number	Percentage
UMS (Urea Molasses Straw)	16	32
UTS (Urea Treated Straw)	4	8
UMB (Urea Molasses block)	2	4
UMS + Hay	1	2
No acceptance	27	54

technologies; most of them (32%) used Urea Molasses Straw (UMS). No improved feeding technologies, such as urea treatment of straw and urea molasses block supplement, were used by the farmers (Hossain *et al.*, 1999). Indigenous knowledge on cattle feeding like chopping of straw, mixing of green grass with straw, feeding tree leaves etc. (Rahman *et al.*, 1998) were practiced by the rural farmers of Mymensingh District of Bangladesh, which were also found being practiced by the farmers in this survey.

Milk production and marketing: From the observed Data, 100% farmers milked their cows manually and milking done by male 76%, female 20% and both male and female 4% (Table 4). Milking was carried out twice a day, morning and evening, in most of the cases and in 6% cases three times a day morning, evening and night (Table 4).

Average milk production per day per cow was 5.78 liter in the study farms, whereas Hossain *et al.* (2004) reported that the average milk production per cow per day was 5.2 liters and Ali *et al.* (2000) mentioned that it was 4.10±1.57 and 2.28±0.85 liters for cross bred and indigenous cows, respectively. Forty four percent, 26% and 30% of the farms disposed their milk by window delivery, home delivery and both window and home delivery system, respectively (Table 4). The information contradicts to the information of Rahman (1996), who reported that 16% farmers disposed milk by window delivery and 58% farmers by both window and home

Table 4: Some relevant information from milking to marketing of milk.

Parameters	Categories	Percentage
Milking system	Manual	100
	Mechanical	-
Type of milker	Female	20
	Male	76
	Both	4
Number of milking/day	1	-
	2	94
	3	6
Milk delivery system	Window delivery	44
	Home delivery	26
	Both	30
Container for carrying	Bucket	14
	Drum	70
	Jug	6
	Poly-pack	10
Marketing system	Vendors	14
	Neighbors+Vendors	22
	Neighbors+Restaurants	28
	Neighbors+Sweet makers	24
	Sweet makers+Vendors	6
	Neighbors	6

delivery. Container used for milk carrying to consumers and market was small drum in most of the cases (Table 4). Twenty eight percent respondents sold their milk to neighbors and restaurants, 24% to neighbors and sweet makers, 22% to neighbors and vendors and 15% to vendors. Hossain *et al.* (2004) studied that 42% farmers sold their milk to milk plant, and Rahman (1996) showed that 15% respondents sold it to open market.

Cost and returns from the dairy farmers level: The items of costs included in this study were feed, housing, labor, treatment and artificial insemination (AI) charge. On the return side, values of milk and cow dung were added. The total costs for raising cow are presented in Table 5. The total costs per cow per year were estimated Tk. 17,790.83. Feed cost was one of the major cost items for raising the cows. The total feed cost per year for a cow was Tk. 14,029.59, which covered 78.83% of the total cost. It was seen that about 16% of the total cost were shared by roughage while concentrate feed constituted 63%. In order of importance, the treatment cost came next to feed cost. The total treatment cost per year was estimated at Tk. 1,872.72, which was 10.53 % of total cost. The amount of labor cost per year per cow was Tk. 1,019.59, which covered about 6% of the total cost. The total housing cost per year per cow was Tk. 790.70, which was about 4% of the total cost. The average AI charge per year per cow was Tk. 83.23.

The returns from dairy cows consisted of sale proceeds of milk and the volume of cow dung in this study. It was assumed that the value of selling calves was equal to the feed cost of the cattle except milch cows of farms yearly. The average sale proceeds of milk were calculated on the basis of the average quantity of milk

Table 5: Cost and returns from the dairy farm at farmers' levels (n-50)

Parameter	Amount (Tk.)	Percentage
Costs		
Feed cost	14,024.59	78.83
a) Roughage	2,809.08	15.79
b) Concentrate	11,215.51	63.04
Housing cost	1,872.72	4.44
Treatment cost	790.70	10.53
Labor cost	1,019.59	5.73
AI charge	83.23	0.47
Returns		
From milk	12,006.22	87.87
From cowdung	1,656.00	12.13

Table 6: Problems on dairy cattle management faced by the farmer and their suggestion (n-50)

Problems and suggestions	Percent of total farmers
Problems	
Shortage of Animal feed	98
Lack of credit facilities	86
Milk marketing	82
Low price of Milk	90
Medicine supply from veterinary hospital	88
Veterinary Service	72
Lack of training	28
Suggestions	
Feed technology (UMB & Urea Treated straw)	98
Fodder cultivation program by Govt. is needed	96
Subsidy needed on animal feed	96
Easy Bank loan system needs to be ensured.	90
Motivation needed in dairy cattle production	87
Organized market for buying and selling of milk	85
Proper vaccination program should be executed	80

produced per day per cow and the average price received per liter of milk Tk. 14.32 multiplied by 360 days. A dairy cow produced average 11.5 kg cow dung. Price of cow dung was imputed by taking the average price at which cowdung was sold at locality. The average price of cowdung/kg was assumed to be Tk. 0.40. The net returns from milk per cow per year were estimated Tk. 12,006.22. The net returns from cowdung per year were Tk. 1,656.00, which was 12% of total benefit.

The dairy farmer owners reported some problems like scarcity of feeds and fodder, milk marketing, low price of milk, inadequate veterinary service and free medicine supply from veterinary hospital etc. About 98% farmer reported shortage of animal feed and 86% reported lack of credit as the major problems for dairy cattle production at farmers' level (Table 6). Problems faced by the farmers during the whole period of the study are shown in rank order. Ali and Anwar (1987) and Hossain *et al.* (1999) from their studies reported that shortage of animal feed was the greatest problem. Lack of training, bank loans, low price of milk and lack of veterinary services were the problems for dairy cattle production in Bangladesh. About 82% farmers have the problem of the milk marketing. The real price of milk is a great problem. During the period of high production, farmers did not preserve milk due to lake of chilling plant. As a result they did not get actual price. The need for improved feed technology, fodder cultivation program and government subsidy on animal feed were the most important suggestions and put forward by 98, 96 and 96% of the farmers, respectively. From the above discussion, it can be concluded that the management condition of small dairy farm in Jessore is more or less traditional. Government should take some important steps immediately like- subsidy on animal feed, cultivation of fodder, providing milk marketing facilities and financial support, expansion of veterinary service, reasonable price of milk, giving managemental training of farm owners etc. for improvement of small dairy farms. Dairy cattle rearing can be recommended as an income generating activity at the farmers' level of Bangladesh.

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