

Role of Dairy Farming in Irrigated Ecosystem: A Village Level Case Study from Eastern India

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Abstract

Dairy farming is one of the important components of irrigated ecosystem and plays a major role towards sustaining agricultural livelihoods. In the present study, a detailed survey was conducted regarding the livestock potentials of the farmers in irrigated ecosystem in relation to the socio-economic status. Maintenance of dairy and related economics was evaluated for each socio-economic class as well as the constraints perceived by each group of farmers. While in case of large and medium farmers, absence of proper and organized marketing facility is one of the major constraint, lack of infrastructural facilities like breeding, health care etc. are major setbacks for small and marginal farmers. However, dairy forms an important livelihood component for the farmers especially for small and marginal classes in the irrigated ecosystem.

Keywords: Farmers class, economics, constraints of dairy farming

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INTRODUCTION

In any watershed development program special emphasis is given on integrated agriculture management where dairy is an important part [1]. Dairy farming dominates livestock production, providing 18 million people, 70 per cent of them women, with employment. The dairy sector is also the major source of income for an estimated 27.6 million people [2]. The majority of milk production is still carried out by small-scale, often landless farmers, who get a large share of the total price paid by consumers (77 per cent). At the same time dairying is the backbone of the marginal farmers and landless labours spread over about 6 lakh villages scattered throughout the country [3].

In irrigated ecosystem, exploitation of natural resources is maximum [4]. Post green revolution; efforts have been generated only towards higher crop production without consideration for soil health [5]. Now, when productivity growth curve has flattened, concept of 'organic farming' is being re-enforced to sustain long-term productivity. However, to implement the culture of organic farming, organic soil management is one of the most important criteria for which dairy farming is an essential component. According

to IFPRI study, large-scale conversion to organic farming require bringing cows back to farms to ensure organic manure supply [6].

Successful planning on dairy farming in rural sector shall not only foster organic agriculture, improvement of farmers' the economic profile shall be the added benefit. The present study was initiated with the following objectives: (i) preparation of an inventory of livestock as per farmer class, (ii) evaluation of the present dairy farming system, (iii) assessment of the related economics and (iv) constraints evaluation.

METHODOLOGY

The study was carried out in three villages viz., Naopara, Syamsundarpur and Kantia in Bardhaman District of West Bengal, India. A total no. of 200 respondents were selected randomly from the different classes in the study area and they were interviewed through a questionnaire. Among them, dairy farmers were identified and they were interviewed with a separate interview schedule to reflect the exact scenario of dairy farming of the study area. Primary data were collected from respondents on dairy farming with respect to livestock potential, milk production, cost and constraints as faced by the dairy farmers.

RESULTS AND DISCUSSION

Livestock population of the area, available dairy production system, economics of dairy farming, constraints perceived by the dairy farmers were analyzed and suggestions from dairy farmers to improve the situation were also made in this study (Tables 1–6).

Table 1 reveals the livestock population of the study area. According to the table the large farmers had more cattle per families (Avg. 5) than other groups followed by small (Avg. 4) and semi-medium groups of farmers (Avg. 3). Very poor potential of buffalos in the study area irrespective of farmers group suggest the dominance of machine power over animal power in the field of agriculture [7]. Marginal and landless farmers of the area had a good

potential of goat population (Avg. 3 and 2, respectively) which accounts 62 percent of total goat population of the area. Interestingly large group of farmers had a very poor goat population [8]. Probably social custom played a factor against maintaining goat population. This factor was clearly supported by the fact that only few landless families had pig population though goatery and piggery may have turned beneficial for rural economy if proper planning was executed.

In the case of poultry, each of the families of the area had on an average 6 to 9 birds. Small group of farmers had highest no. of birds (9), followed by large (8), marginal (7), medium (6), semi-medium (6) and landless (6), respectively (Table 1).

Table 1: Status of Livestock Population in the Study Area.

Status (No of respondents)	Cow	Buffalos	Goat	Pig	Total	Average	Poultry	Average
Landless (50)	8	-	98	12	118	2	295	6
Marginal (66)	23	-	162	-	185	3	467	7
Small (26)	91	2	69	-	162	6	223	9
Semi-medium (24)	79	2	26	-	150	4	144	6
Medium (27)	25	-	63	-	88	3	163	6
Large (7)	34	4	6	-	44	6	56	8
Total (200)	258	8	424	12	702	4	1348	7

Table 2: Available Dairy Production System.

Status (No of Residence)	Cattle No.	Milking Cattle No.		Avg. Milk Production/Cow/Day	Avg. Milking Day/Cow/Year
		Deshi	Improved		
Landless (5)	8	6	-	2.00	142
Marginal (18)	23	16	3	2.94	149
Small (23)	91	64	11	3.73	153
Semi-medium (22)	79	55	18	4.85	157
Medium (6)	25	14	7	5.67	163
Large (6)	34	16	14	6.80	165
Total (80)	258	171	56	4.13	154

Table 3: Maintenance Cost of Dairy Farming.

Particulars	Operational land holding groups						Average
	Large	Medium	Semi-medium	Small	Marginal	Landless	
Cost of fodder	1524.5	1495.6	1484.7	1280.5	475.2	324.5	1130.1
Labour cost	1140.2	1454.2	1485.2	924.3	-	-	868.7
Veterinary charges	151.1	145.6	138.2	155.2	141.3	162.5	146.8
Miscellaneous cost	104.3	123.3	122.2	136.5	142.3	158.7	131.8
Depreciation (5%)	286.9	282.4	275.1	265.2	237.2	176.5	258.9
Interest on capital investment	524.6	511.2	497.3	420.1	408.3	322.6	447.2
Total cost	3731.7 (100)	4012.3 (100)	4002.7 (100)	3181.8 (100)	1404.3 (100)	1144.8 (100)	2983.5 (100)

*Parenthesis indicates percentage of total cost

Table 3 reveals the cost of dairy farming in the study area. Total cost of maintenance of livestock was highest from medium farmers (₹ 4012.3) followed by semi-medium (₹ 4002.7), large (3731.7), Small (3181.8), marginal (₹ 1404.3) and landless (₹ 1144.8). Total cost of maintenance in case of marginal and landless farmers was much low than others as they contributed more family labour in dairy farming than others. For large, medium, semi-medium and small farmers, cost of fodder and labour were two components which accounted for about 70% of the total cost. But in case of marginal and landless dairy farmers, they spend a very little amount in this department as because they generally collect fodder from nearby grazing lands rather than buying from the market. Small cattle potential also helped them to make it feasible. Besides this, they also maintain the livestock by themselves in order to get maximum benefit from dairy farming.

The average gross income of the study area per year in dairy farming was ₹ 6606.9 per cow (Table 4). Yearly income was highest in case of large farmers (₹ 11370/cow). It is probably due to having more number of improved cattle, balanced diet and proper health care. In terms of benefit cost ratio, it was highest in case of marginal farmers (3.2) followed by large (3.0), landless (2.6), medium (2.4), semi- medium (1.9) and small (1.8). Small and landless farmers had higher benefit cost ratio because family labour is not included in expenditure. Average cost of milk production ranged from ₹ 5.6/liter (in case of small farmers) to ₹ 3.2/liter (in case of marginal farmers).

Table 5 reveals the constraints of dairy farming perceived by the dairy farmers of that area. The constraints perceived by the different group of farmers were ranked I to VII according to their performance. According to

Table 4: Economics of Dairy Farming.

Status (No. of Respondence)	Gross Income	Gross Expenditure	Cost of Milk Production/Litre.	Benefit Cost Ratio
Landless (5)	2990.0	1144.8	4.0	2.6
Marginal (18)	4530.6	1404.3	3.2	3.2
Small (23)	5856.9	3181.8	5.6	1.8
Semi-medium (22)	7764.5	4002.7	5.3	1.9
Medium (6)	9718.1	4012.3	4.3	2.4
Large (6)	11370	3731.7	3.3	3.0
Total (80)	6606.9	2983.5	4.7	2.2

Table 5: Constraints Perceived by the Dairy Farmers.

Type of Constraints	Operational Landholding Classes					
	Large	Medium	Semi-medium	Small	Marginal	Landless
Social constraints	VI	VII	VII	VII	II	II
Socio-economic constraints	VII	VI	IV	I	I	I
Feeding constraints	III	II	II	IV	V	VI
Problem in livestock management	V	IV	VI	VI	VII	VII
Constraints in breeding	IV	V	V	V	VI	V
Lack of health care service	II	III	III	III	III	III
Lack of marketing facility	I	I	I	II	IV	IV

Table 6: Suggestion for Improvement of Dairy Farming.

Suggestions	Frequency	Percentage	Rank
Development of adequate no. of chilling center	45	56.25	IV
Improvement of credit facility	53	66.25	III
Training programme for sustainable dairy farming	62	77.50	II
Establishment of artificial insemination	29	36.25	VI
Improvement of milk co-operative society for securing steady market facility and getting remunerative price of milk	77	96.25	I
Establishment of milk processing unit	42	52.50	V

large, medium and semi-medium farmers lack of marketing facilities was the main constraints. Whereas for small, marginal and landless farmers, socio-economic constraints like nonavailability of pasture land, poor infrastructure, initial high cost, etc. were the main constraints. Marketing related constraints came later as they heavily depended on local market. Irrespective of the operational land holding classes, lack of health care service was one of the main concern areas. Feeding and livestock related constraints were other major constraints perceived by the dairy farmers. Social constraints like religion, caste effect (more specifically for marginal and landless group of farmers as most of them belong to lower cast of the society) were another issue. In the prepared questionnaire, suggestions were also asked from all the respondents for improving the existing dairy farming system. The suggestions were ranked according to their importance in Table 6. According to the Table 6, 97 percent respondents stressed on improvement of milk co-operative society for securing steady market facility and getting remunerative price of milk. Since without a strong co-operative society, dairy farmers are facing problems like ups and downs in milk price, lower market price, etc. The milk vendors also harass them for the sake of payment. Need of training facilities were also in the priority list of the dairy farmers. They were especially facing problems like lack of balanced diet for cattle, identification of early disease symptoms of cattle, introduction of high yielding varieties of fodder, etc. which requires proper training. Besides this, other suggestions listed where improvement of credit facilities, development of adequate number of chilling center, establishment of milk processing unit and establishment of artificial insemination centre.

CONCLUSION

Dairy sector has the potential to emerge as the prime source of income in irrigated ecosystem if right steps are taken with the improvement of infrastructural facilities. Thus for sustainable dairy farming implementation of proper management practices, awareness programme and catering to the needs of the farmers should be of utmost priority for the goal of improved the economic scenario of rural sector.

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