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A study on the Cost and Return at different levels of milk production per Cow

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Abstract:
The cost and return on milk production is an important consideration for the dairy farmers to continue the activities of dairy farming. The study is undertaken with the objective of ascertaining the cost and return on production of milk at different levels of production. To conduct this study the researcher has obtained primary data from 40 dairy farms in Kamrup metro and Morigaon districts. The result shows that the dairy farmer garners higher return on direct sale to customers and hotels. There is an economies of scale in fodder and labour cost incurred for the dairy farmers rearing maximum number of cows with higher productivity. The increasing cost of feeds and fodder and lack of skilled manpower is a major constraint for the dairy farmers to continue dairy farming activities.

Keywords: Cost, return, milk production, marketing channels.

1. INTRODUCTION

The dairy farmers rearing milch cross, jersey and holstein friesan cows are feeded according to the cows production capacity. The feeding quantity is reduced considerably during the cows initial dry period i.e. usually 60 days before the conception of cows to reduce production to nil to give optimum production in the next lactation. Also during the summer season the cows are fed less quantity of fodder due to hot and humid climate as compared to the feeding quantity in the winter season and the production of cows also reduces substantially in the summer season as compared to the winters. In the research area, it is found that the dairy farmers rearing cross, jersey and holstein friesan cows possess maximum number of milch cows having production ranging from 6 to 12 litres per day. So, the researcher has decided to assume cows having three production variables i.e. 6 litre per day, 9 litre per day and 12 litre per day in order to obtain cost and return of cows of each production variable. In the case of dairy farmers having milch cows with production unlikely in the defined production variables of cows, cost incurred in feeding particular cow is calculated in proportion to include it in the nearest defined production variables. As the dairy farmers rear cows with varied production capacity, it is difficult to obtain accurate average of labour cost incurred by the dairy farmers of the area in looking after cows having output in each defined

variable. For instance, in the dairy farms with a herd size of 9 milch cows having production of maximum cows in the range of 12 litres per day incur labour cost per animal per litre much lower as compared to the similar sized farm with production of maximum cows in the range of 6 litres per day. So, the researcher in order to obtain accurate labour cost has considered only those dairy farms possessing equal number of cows of different defined production variable. The maintenance cost and electricity charges incurred per milch cow is obtained in proportion by taking into consideration the annual maintenance cost and monthly electricity charges incurred by the dairy farmers in maintaining the number of cows in the shed including the heifers. The dairy farmers cooks fodder once a day in quantity that satisfies the feeding requirement of cows excluding the heifers for three meals and it is usually cooked in the morning or evening based on their covenience. So, to arrive at the firewood cost incurred in feeding cows in each production defined variable per day, the consumption of cooked fodder to the total quantity of cooked fodder by the cows is taken into consideration based on the total firewood cost incurred at one cooking period. The dairy farmers had to fetch out Rs. 150 per cow to vaccinate the cows for protection from FMD(Foot & Mouth Diseases) once a year. The dairy farmers usually feeds supplements such as calcium & vitamins in the immediate aftermath of the cow's delivery for a continous period of 5 days costing Rs. 340 for 2 litres pack or during the time the cows contact diseases.

It is also found from the survey that a cross, jersey and holstein friesan cow having daily production of about 12 litres are fed with 4.2 kg of wheat bran, 1.7 kg of rice polish, 1 kg of maize crush, 18 kg of green grass or 12 kg of hay or combination of grass and hay in the ratio of 12 kg grass and 4 kg hay per day. The cooked fodder sometimes also composed of concentrates such as peels of various vegetables as well as other materials(papaya, wild banana,etc) available in the house. In the morning at 5.00-6.00 A.M., 1.5 kg of wheat bran, cooked fodder comprising of raw 0.63 kg rice polish and raw 0.37 maize crush and the mixture is supplemented with 152 grams of salt and 25 litres of water. Thereafter, about 6 kg of grass is given or 4 kg of hay is provided. The dairy farmers usually fed the cows with hay in the morning period if there is shortage of grass. The fodder quantity is reduced in the next meal period given at around 11.00-12.00 A.M. In this meal period, 1.2 kg of wheat bran, cooked fodder comprising of raw 0.44 kg rice polish and raw 0.26 maize crush and the mixture is supplemented with 117 grams of salt and 25 litres of water. Thereafter, about 6 kg of grass is usually given in this period or 4 kg of hay is provided in scarcity of green grass. In the evening meal provided at around 4.30.-5.30 P.M., the cows are provided with the same plan as followed in the morning meal. The dairy farmers feeding hay as an alternative to green fodder provides 4 kg hay in each meal.

Similarly, for cross, jersey and holstein friesan cow's having daily production of about 9 litres are fed with 3.5 kg of wheat bran, 1.33 kg of rice polish, 0.76 kg of maize crush, 15 kg of green grass or 10 kg of hay or combination of grass and hay in the ratio of 10 kg grass and 3.3 kg hay per day. In the similar way, for cross, jersey and holstein friesan cow's having daily production of about 6 litres are fed with 2.8 kg of wheat bran, 0.93 kg of rice polish, 0.57 kg of maize crush, 12 kg of green grass or 9 kg of hay or combination of grass and hay in the ratio of 8 kg grass and 3 kg hay per day.

In the case of dairy farmers rearing indigenous cows, it is found that the average production of milch cows is 4 litres per day and they had maintained an average herd size of 3 milch cows. The dairy farmers have the practice of feeding cows only once in the evening at around 4.30-5.30 P.M. The cow's having daily production of about 4 litres are fed with 0.375 kg of wheat bran, 0.375 kg of rice polish and 0.125 kg of maize crush per day and the mixture is supplemented with 62.5 grams of salt and water. The dairy farmers provide hay in exceptional situations such as when the cows are unable to graze due to diseases. The dairy farmers have reported to incur an annual expenditure of Rs. 6,000 on purchase of hay of 1,000 kg. So, based on the consumption of dry fodder to the total quantity of fodder by the milch cows proportionately the cows are assumed to have consumed 0.68 kg hay per day. The maintenance cost and electricity charges incurred per milch cow is obtained in proportion by taking into consideration the annual maintenance cost and monthly electricity charges incurred by the dairy farmers in maintaining the number of cows in the shed including the heifers. The dairy farmers usually cooks fodder in the afternoon to feed cows in the evening. So, the consumption of cooked fodder to the total quantity of cooked fodder by the milch cow is taken into consideration based on the total firewood cost incurred at one cooking period in arriving at firewood cost incurred per cow per day. The dairy farmers usually feeds supplements such as calcium & vitamins in the immediate aftermath of the cow's delivery for a continous period of 5 days costing Rs. 340 for 2 litres pack or during the time the cows contact diseases.

Objective of the study

The objective of the present study is to calculate the cost and return of production per cow.

2. RESEARCH METHODOLOGY

The present study is descriptive in nature. The researcher has collected primary data from the dairy farmers of Kamrup metro and Morigaon districts that are dependent on milk production activities as a primary source of livelihood. The researcher has used purposive sampling method to collect data. A sample of 40 units has been selected in the months of October to November, 2020.

3. ANALYSIS AND DISCUSSION

Table 1: Calculation showing the total cost and quantity of input required per day per cow.

Sl. No.	Type of Cow	Quantity of Fodder (in Kg)				Cost of Fodder & Other Cost (in Rs.)						Total Cost (in Rs.)
		Wheat Bran	Rice polish	Maize crush	Grass/ Grass: Hay Comb	Wheat Bran 26.25 Per kg	Rice Polish 24 Per Kg	Maize Crush 28 Per Kg	Grass: Hay 200: 300 Per 50 Kg	Labour Cost	Other Cost	
1	Jersey or Friesan	4.2	1.7	1	18/12:4	110.25	40.8	28	72/48:24	133.33	10.5 4.21 0.41 4.05 0.21 0.93 20.38	404.69
2	Jersey or Friesan	3.5	1.33	.76	15/10:3.3	91.875	31.92	21.28	60/40:20	99.99	8.164 3.26 0.41 4.05 0.21 0.93 17.	322.08

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3	Jersey or Friesan	2.8	.93	.57	12/8:3	73.50	22.32	15.96	48/32:18	66.66	5.85 2.34 0.41 4.05 0.21 0.93 13.86	240.23
4	Indi. or Non-Desc.	.375	.375	.125	.68 hay	9.84	9	3.5	4.08	100	5.625 2.739 0.20 0.93 9.494	135.91

Table 2: Return on sales per day per cow.

Sl. No.	Prod ltr	Gross Sales (in Rs.)			Net Profit (in Rs.)		
		Middlemen 48 Per litre	Hotels 55 Per litre	Direct consumers 60 per litre	Middlemen	Hotels	Direct Consumers
1	12	576	660	720	171.31	255.31	315.31
2	9	432	495	540	109.91	172.92	217.92
3	6	288	330	360	47.77	89.77	119.77
4	4	-	-	240	-	-	104.08

From the survey, it is found that the feeds and fodder cost constitutes the maximum percentage of cost in maintaining cross, jersey and holstein friesan cows of different defined production variables. In cows having production of about 12 litres, 9 litres and 6 litres, the feeds and fodder cost constitutes 63.30 %, 64.97% and 67.87% respectively of the total cost. The dairy farmers incurred maintenance expenses of Rs. 21.34, Rs. 23.25 and Rs. 27.17 per day, in obtaining production per litre in feeding cows having production of about 12 litres, 9 litres and 6 litres respectively. The obtained results indicated that the dairy farmers feed cows according to their productivity levels. However, there is economies of scale in feeds and fodder cost incurred if the dairy farmers possess majority of cows having higher levels of production. In the case of dairy farmers rearing indigenous cows, the dry fodder are fed once a day usually in the evening with minimum feed materials and sometimes hay constitutes 20.58% of the total cost.

The labour cost followed the feeds and fodder cost in cost incurred by dairy farmers in deriving production from jersey and friesan cows of different defined production variables. The dairy farmers incurred expenditure of 32.94%, 31.04% and 27.74% of the total cost in maintaining cows having production of about 12 litres, 9 litres and 6 litres respectively. It was also found that the labour cost per milch cow per day varies directly with its level of production as the labour cost incurred per litre of output is the same at various levels of production. However, there is economies of scale in labour cost incurred if the dairy farmers possess majority of cows having higher levels of production. The dairy farmers rearing indigenous cows incur higher labour cost than fodder cost per milch cow per day having production of about 4 litres and constitutes 73.57% of the total cost. The result obtained implies that the labour cost per milch cow per day was higher because of the smaller herd size of milch cows and also the involvement of labour in looking after cows in grazing.

The dairy farmers garners higher return per milch cow if sold directly to direct consumers and hotels as found in the study. As a small percentage of dairy farmers has materialize on cow dung by deriving benefit from it by installing Gobar-Gas facilities, but the time consumed in cooking has make the farmers reluctant to use it more frequently. The farmers(5%) possessing borewell facilities electricity charges is not taken into account while computing the production cost per cow as it would misappropriate the overall computation. The return from value added products as obtained by dairy farmers(3%) on demand from customers can be correlated with the return derived from sale to direct consumers as the cost incurred in making dairy products is equal to the return obtained from sale to middlemen. Therefore, the return from value added products is not taken into consideration while computing the production cost and return per cow.

In the table, the cost and return of maintaining calf, heifers, bull calf and lactating cows are excluded as they do not derive any present recurring day to day return except the rare sale of bull calf. As the dairy farmers graze on the public field without any expenses whatsoever, the researcher did not include the cost if had to be paid for the grass or for grazing in the field by the dairy farmers.

4. CONCLUSION

Finally it can be concluded that the dairy farmers garners higher return on direct sale to customers and hotels. There is an economies of scale in fodder and labour cost incurred for the dairy farmers rearing maximum number of cows with higher productivity. However, the absence of market place for majority of the dairy farmers has proved to be a dilemma for the farmers. The increasing cost of feeds and fodder and lack of skilled manpower is also a major constraint for the dairy farmers to continue dairy farming activities. Morever, the feeding quantity of the indigenous cows can be increased to obtain higher milk production.

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