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Enriching Survival of Calves: An Analysis on Managerial Procedures in Milking Farms

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Abstract

The existence of calves is critical to the dairy sector's entire success and long-term viability of milk production. In an effort to improve the survival and welfare of calves, this investigation looks at and evaluates the administrative procedures used in Indian milking farms. In order to analyze the calf death and management strategies that the farmers are using, 30 dairy cultivators from large (G1), medium (G2) and small (G3) dairy farms were chosen for the 90 dairy farms in India that were the subject of the current analysis. The findings showed that parasite load was the cause of the greatest amount of calf death (72.22%), which was attributed to gastroenteritis. In contrast to female calves (77.05%), male calves had a higher captured death rate (83.38%). In comparison with G2 (81.19%) and G1 (83.34%), the calf death rate (67.21%) was smaller among G3 farms. Apart from the three farmers of G3 farms, no industrial dairy farmer participated in the cleaning of the naval chord. A large percentage of dairy producers gave their calves milk (78.87%) prior to and after the dam was milked, yet they provided colostrums (73.32%) after the placenta were released, which is not very healthy for newborn calves. Merely 15.54% of farmers had routinely dewormed their calves. Therefore, it was determined that the farmers thought it was unfeasible to raise calves and instead decided to buy milch buffaloes as a substitute.

Keywords: Calves, survival and welfare, dairy sector, milk production, calf death.

INTRODUCTION

A careful balancing act between experience, accuracy and strategic planning is required to manage a dairy farm. A milking farm's complex network of managerial practices is essential for maintaining maximum output, animal care and the operation's overall success. An in-depth understanding of the complex biological mechanisms controlling milk production is essential for efficient farm management (1). Young calves are prone to a variety of diseases and reducing stresses like severe weather, overcrowding and dirty living conditions reduces the chance of illness. An effective calf survival plan needs to involve timely veterinary care and routine health monitoring (2). In livestock agriculture, ensuring the survival of calf is essential to producers' financial stability and the use of sustainable farming methods. Automatic milking systems are a common feature of modern dairy farms, but they need to be monitored and maintained (3). The future of the livestock sector lies with calves. Dairy development benefits from scientific calf-rearing management. The ability to survive the calf's crop generated and improved management techniques are essential to the dairy industry's success. A dairy farm's high survival rate contributes to increased selection pressure that is one of the key elements regulating genetic gain and lucrative returns (4). Providing sufficient nourishment is one of the main factors to determine calf survival. The milk of their mothers is the primary source of nutrition and antibodies of newborn calves need for healthy growth and immune development. Since colostrum includes large quantities of antibodies that provide immune protection to the calf, it is very important to feed the newborn during the first several hours of birth (5).

Study (6) investigated the relationship between the calf management techniques used on supply dairy farms and the risk of mortality on veal farms. The total amount of male calves that were sold from each dairy operation was used to calculate the risk of mortality for the calves. Study (7) investigated the environmental factors and

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assessment management used on dairy farms to raise pre-weaned dairy calves. Measurements of the amount of space allotted for each calf and the cleanliness of the feeding apparatus were part of the environmental assessment. Study (8) evaluated the calf-rearing and prepartum systems, together with the management techniques that affect the welfare of the calves in pastured dairy herds. Research (9) established farmer opinions regarding different housing alternatives as well as the methods of calf management already in use. Study (10) evaluated the impact of low calcium levels in the dam's system during calving on dairy cow performance, health and survival when fed offspring in facilities that are certified organic.

Study (11) evaluated the health of heifer calves and how they adopted rearing techniques. It investigated the variables linked to various rearing approaches on dairy farms in Canada. Research (12) examined the current calf management techniques used on Australian dairy farms and their relationship to morbidity and mortality at the herd level. Research (13) examined the morbidity and mortality of dairy cow calves that had been pre-weaned, considering several environmental factors, wellness, feeding and management approaches. Study (14) examined the percentages of medical treatment and death among pre-weaned dairy calves housed in groups with automated feeding systems in relation to farm management techniques, housing and environmental factors. Farm records were gathered for mortality and medical interventions. Study (15) evaluated the frequency with different milk-fed calves are fed and managed in comparison to dairy farms that used “automated milk feeders (AMF)” and “manual milk feeding (MMF)” systems.

Research (16) evaluated the total expense of rearing heifers in Great Britain from birth to their first calving, accounting for mortality. Moreover, it assessed the principal determinants that impact these costs across a range of agricultural systems and calculated the duration needed for heifers to recover the expenses associated with nurturing on particular farms. The impact on a full hay-based "Totally Mixed Ration (TMR)" of calves' feed consumption, growth efficiency, and feces emission were investigated in research (17). It developed a tentative estimation equation for the relationship between body weight and solid feed intake in Holstein heifer calves.
The goal of the current study was to examine calf mortality on commercial dairy farms, specifically in relation to improved management methods.

MATERIALS AND METHODS

In the Rajasthan districts of Jaipur and Udaipur, data was gathered from ninety commercial dairy farms. A total of ninety farms were chosen, representing three different sizes of dairy farms: G3, with 11 milch animals; G2, with 12-21 milch animals and G1, with more than 25 milch animals. The data was gathered on calves' death rates and management strategies used by commercial dairy farmers.

RESULTS

Calf Death Rate

Table (1) displays the disease-wise mortality data of calves from several commercial dairy farms. The results indicated that gastroenteritis, which was recorded in 72.22% of the dairy farms, is the most prevalent and frequent illness in calves. Endoparasitic infection (67.78%) and ectoparasitic infestation (62.22%) are the next most common diseases in calves. Bloat, naval illness, pneumonia, septicemia and eye infections cause calves death rates of 45.56%, 40.01%, 13.33%, 10.00% and 8.87%, respectively. Unsanitary shed conditions and inadequate insulation against cold weather could be the likely causes. Records show that 7.76% and 6.67% of the calves died as a result of under and overfeeding.

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Table (1). Numerical outcomes of the relationship between the concentrations of Ni, VC, and the combined impact on renal weight

Disease	Gastro enteritis	Bloat	Ectoparasitic infestation	Endoparasitic infestation	Pneumonia	Overfeeding	Eye infections	Underfeeding	Septicemia	Naval ill
G1 (n=30)	18 (60.00 %)	16 (53.33%)	19 (63.33%)	17 (56.67%)	3 (10.00 %)	2 (6.66%)	4 (13.33%)	3 (10.00%)	2 (6.66 %)	12 (40.00 %)
G2 (n=30)	25 (83.33 %)	11 (36.67%)	21 (70.00%)	24 (80.00%)	4 (13.33 %)	2 (6.66%)	3 (10.00%)	2 (6.66%)	4 (13.33%)	10 (33.3%)
G3 (n=30)	22 (73.33 %)	14 (46.67%)	16 (53.33%)	20 (66.67%)	5 (16.66 %)	2 (6.66%)	1 (3.33%)	2 (6.66%)	3 (10.00%)	14 (46.67 %)
Total (n=90)	65 (72.22 %)	41 (45.56%)	56 (62.22%)	61 (67.78%)	12 (13.33 %)	6 (6.67%)	8 (8.87)	7 (7.76)	9 (10.00%)	36 (40.01 %)

Table (2) displayed the death rates according to the calf's gender and the dimension of the dairy farms. The 80.17% calves' death rate in commercial dairy was indicative of the producers' inadequate health care procedures. Compared to G2 (81.19%) and G1 (83.34%) commercial dairy farms, G3 had a lower calf mortality rate (67.21%). When it came to sex, male calves had a high mortality rate (83.38%). For the purpose of running a successful dairy, the owners constantly replace the animals by buying fresh milch cows from various sources. G1 had a higher male calf death rate (86.57%), followed by G2 (81.82%) and G3 (75.76%), based on the size of the commercial dairy farm. The death rates for female calves in G3, G2 and G1 dairy farms were 57.14%, 80.72% and 79.68%, respectively.

Table (2). Calf mortality rate according to size of dairy farm and calf gender

Dairy Farms	Male Calves		
	Born	**Die**	**Rate**
G1	216	187	86.57 %
G2	121	99	81.82 %
G3	66	50	75.76 %
Total	403	336	83.38 %
	Female Calves		
	Born	**Die**	**Rate**
G1	192	153	79.68 %
G2	166	134	80.72 %
G3	56	32	57.14 %
Total	414	319	77.05 %
	Total		
	Born	**Die**	**Rate**
G1	408	340	83.34 %
G2	287	233	81.19 %
G3	122	82	67.21 %
Total	817	655	80.17 %

The Practices of Management

The cattle management techniques employed by commercial dairy farms are shown in Table (3). As per the research, most of the calves developed an infection in their naval cord. The naval cord is an entryway for disease through which organisms can enter the bloodstream or underlying tissues, leading to particular serious diseases in newborn calves, so commercial dairy farmers must take the utmost care of it as soon as the calf is born. Naval

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cord infections in the calf can be avoided by cutting the cord with a sanitary blade and soaking it in an antiseptic solution. With the exception of three farmers of G3 dairy farms, no commercial dairy farmers have followed the naval cord disinfection protocol.

Table (3). Practices for managing calves on commercial dairy farms

Practice	**Disinfection And Cutting of Naval ill**		**Colostrum feed Time**		**Feed Milk**		**Periodic Deworming**		**General Condition Of Calves**		
	Yes	No	In an hour	After the release of a placenta,	Earlier and later than milking	Just one full teat is left.	Yes	No	Good	Average	Emaciated
G1 n=30	5	25	8	22	26	4	7	23	6	18	6
G2 n=30	6	24	9	21	20	10	3	27	7	16	7
G3 n=30	9	21	7	23	25	5	4	26	10	8	12
Total n=90	20 (22.23 %)	70 (77.76 %)	24 (26.67 %)	66 (73.32 %)	71 (78.87 %)	19 (21.10 %)	14 (15.54 %)	76 (84.43 %)	23 (25.56 %)	42 (46.67 %)	25 (27.78 %)

Farmers are not aware of the latest scientific calf-rearing management techniques. Colostrum is not healthy for newborn calves, as most dairy producers (73.32%) fed it to the calves after the placenta was released. Just 26.67% of the farmers gave their calves colostrum in an hour of their birth. Colostrum should be given to calves as soon as possible after birth, ideally within an hour of the animal's birth. It is a well-known fact that colostrum loses some of its ability to protect calves from infection when feeding delays occur. Just 21.10% of dairy farmers permitted their calves to nurse their dams with a single teat full of milk, whereas the majority of farmers (73.32%) gave their calves milk before and after milking. During the first three months of life, the calf needs to consume enough milk and a calf starter that is low in fiber and high in quality protein.

The majority of commercial dairy producers are not leaving enough milk in the udder for the calf to survive; instead, they are using the calf as a stimulant to get the milk let down. Just 15.54% of farmers de-worm their calves, while 84.43% of farmers do not. It was noted that the majority of farmers were not applying the necessary dosage of a dewormer and that many farms had not embraced scientific deworming techniques.

A potential reason is those farmers are not aware of scientific calf-rearing management practices. The farmers had the practice of deworming their calves only in cases when they noticed worms in their excrement or when the calves showed signs of illness. Therefore, deworming the calf is crucial and should be done on a regular basis beginning in the first week of life, again after 22 days, then once every seven months and three times a year after that. The majority of calves (46.67%) at dairy farms had average health conditions, according to the results. Just 25.56% of calves are in good health, while 27.78% of them are emaciated.

To ensure a consistent amount of milk output all year round, many dairy farmers choose to raise milch animals. Furthermore, many dairy farmers are concerned with immediate financial gain and unable to anticipate the financial advantage of breeding calves with good genetics and milk production potential. Instead of raising calves, some dairy farmers choose to buy milch buffaloes as an alternative.

CONCLUSION

This investigation explores the administrative practices used in Indian dairy farms, with a particular emphasis on management techniques and calf mortality. The study includes 90 dairy farms classified as G1, G2, & G3, with 30 dairy farms selected from each group. The results show that parasite burden, namely gastroenteritis, was the primary factor of calf death (72.22%). Furthermore, the mortality rate for male calves was higher than that of female calves (77.05%–83.38%). Remarkably, G3 farms showed a decreased calf mortality rate of 67.21% in

contrast to G1 farms with a rate of 83.34% and G2 farms with a rate of 81.19%. A total of three farmers in G3 farms took part in the cleaning of the naval chord, while a substantial proportion (78.87%) of dairy farmers provided their calves with milk both before and following the milking of the dam. Moreover, a significant proportion (73.32%) of the participants supplied colostrum subsequent to the placenta's absence; this practice cannot be optimal for the benefit of the newborn's health. Approximately 15.54% of farmers engaged in the regular practice of de-worming their calves. It was discovered that farmers considered calf rearing to be unfeasible and decided to purchase milch buffaloes instead. This highlights an urgent requirement for training and intervention to enhance calf management techniques in Indian milking farms to guarantee the long-term viability of the dairy business.

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