

## Existing calf management practices and their adoption using the E information module in Uttar Pradesh

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### ABSTRACT

Calf management in traditional dairy farming receives less attention as compared to milking animals. Though calves represents the main source of replacement stock and are important in letdown of milk, they are the key to a successful dairy enterprise and preserving & maintaining good quality germplasm. Therefore it is necessary to keep calf alive during the first few weeks of life by providing careful management of the nutrition, health and wellbeing will ensure the calves get off to a good healthy start. Thus the study was planned to assess the existing adoption of calf management practices and change in knowledge level of farmers after exposure to E-information module in Uttar Pradesh. A total of 160 dairy farmers who were rearing the dairy animals and having one recently born calves was interviewed to get first-hand information about calf management and were exposed to E-information module containing details about the scientific calving management practices. The results state that majority (63.38%) of respondents were feeding colostrum but only 1.87 percent used to feed the colostrum within one hour and the concept of preparing and feeding artificial colostrum was not known to the farmers. It was observed that the only 13.75, 19.38, 3.75 and 17.25 percent of respondent in the study area were following deworming, bedding to calf, disbudding and exposure to sunlight. The information module had change the knowledge and thus mean gain in knowledge was 16.60 percent among the respondents. Thus the utilization of ICT tools can be effectively used to enhance the knowledge of farmers about scientific calf management practices.

**Key word:** Effectiveness, Feedback, Information module, ICTs, Knowledge, Transition period

Calves are the future stocks of the farm. Successful rearing of young calves particularly the female calves is key to a successful dairy enterprise but is also essential for preserving and maintaining good quality germplasm<sup>9</sup>. It is therefore important that they are reared economically to ensure early maturity. Success of dairy project also depends upon fast rearing to a breedable age and with a minimum mortality. Mortality of calves particularly

in the first month should be kept below 5% by proper management practices. Healthy calves with higher growth rate and low mortality rate are essential for higher profitability of a dairy project. In the management of larger growing stock or milking cows, management lapses can reduce growth rates or milk production, but even small mistakes with the very young calf can cause calf mortality and reduced profitability. Losing a calf earlier in its life means same as losing an adult cow. Calf losses substantially reduce the returns from cattle raising. The economic losses are direct and indirect. Direct losses are those derived from the loss of the calf, planning and labor already invested by the herdsman, and veterinary expenses from obstetric and post-natal care. Indirect losses are infertility, chronic disease,

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and impaired development of the calf<sup>14</sup>. Thus, just keeping the calf alive during the first few weeks of life is a goal that requires preparation and execution of specific management practices. Additionally, the health of the calf, the development of its digestive tract function, and growth and development of its body during this period will influence subsequent performance. Careful management of the nutrition, health and wellbeing of the cow/heifer will ensure the satisfactory delivery of a healthy calf<sup>11</sup>. It is important to get calves off to a good healthy start. Calf hood diseases have a major impact on the economic viability of cattle operations, due to the direct costs of calf losses and treatment and the long term effects on performance and have a great influence in the economics of milk production. Thus the study was planned to assess the existing adoption of calf management practices and change in knowledge level after exposure to E-information module in Uttar Pradesh.

## MATERIALS AND METHODS

The present study was undertaken in the state of Uttar Pradesh. The said state was purposively selected because it is having highest population of cattle and buffalo (19.50 and 30.61 million) and the state being the highest produce of milk in country (23.30 million tonnes) in 2019-20. Eight villages from two districts were selected on the basis of random selection. The experimental research design pre and post without control group was used to test the effectiveness of the prepared module. For every selected village, a list of farmers who were rearing the dairy animals and having one recently born calves was prepared. From the list 20 farmers were selected by applying suitable random sampling.

Thus 160 dairy farmers (20 from each village) were interviewed to get first-hand information. An E-information module (supported by video, audio, image and text format) was developed containing the details about the scientific calving management practices (feeding, management and health care) and the respondents were exposed to it. The developed knowledge test was used at two stages that is in pre exposure and post exposure treatment of dairy farmers. The scores assigned were 3, 2, 1 and 0 to accurate, somewhat accurate, least accurate and wrong/no reply respectively and then the total score for each respondent was calculated by summing of his/her scores for all the items and difference between the pre and post exposure scores was taken as knowledge gain. Knowledge gain, which is the information acquired through exposure (difference in knowledge percentage before exposure and after exposure to information module) was recorded and knowledge index was measured by using following formula

## RESULTS AND DISCUSSION

Herd size indicates the number of animals reared by the respondents at the time of investigation. The classification of respondents was done with respect to their standard animal unit and were presented in table 1. It shows that 43.75 percent respondents were rearing small dairy animal unit, 38.75 percent were rearing medium (5.3-7) and only 17.5 percent of the respondent possess large herd of dairy animals. The average herd size in the study area was 5.03 animals per household though some of the respondents possess large herd size and having 11.30 standard animal units.

**Table 1. Herd size as per standard animal unit (n=160)**

S No.	Variable	Categories	Frequency	Percentage
1.	Herd size (numbers) (Mean :5.03) (Range:2.13-11.30)	Small (<5.3)	70	43.75
		Medium (5.3 – 7.0)	62	38.75
		Large (>7.0)	28	17.50

The collected data were further analyzed and the results shows that the respondents possess 104, 72 and 708 indigenous cow, crossbred cow and

buffalo respectively. They possess about 128 calves (both male and female). The farmers had shown preference towards buffalo instead of cow. The

reason for the preference of buffalo was because of higher fat content in milk, decent lactation milk yield, less reproductive problems and good sale price of the animals.

### Existing feeding practice of calf

It could be seen from table 2 that majority (64.38%) of respondents were feeding colostrum to calf only after shedding of placenta. It was further seen that only 1.87 percent used to feed the colostrum within one hour, while 18.75 percent fed when calf is able to suckle by their own and only 15.00 percent feed the colostrum within 1-6 hour after birth respectively. It was observed that dairy farmers waited for expulsion of placenta, and on

many occasions the animal did not release placenta for more than 7-8 hours, thus the colostrum feeding was delayed, leading to lowered immunity level in calves<sup>1,10</sup>. Table 2 revealed that 73.75 percent of respondent allowed to suckle the calf just before and after the milking thus providing about 1 litre of milk to calf. The finding<sup>7</sup> state that majority (55.4%) of the respondents allowed the calves to suckle only one teat, while remaining 44.6% of the respondents allowed suckling of two teats. The concept of preparing and feeding artificial colostrum was not known to the farmers. So it is necessary to educate and demonstrate the preparation of artificial colostrum to the respondent.

**Table 2. Feeding practices of neonatal calf (n=160)**

S. No.	Calf feeding practices	Frequency	Percentage
1.	Colostrum feeding		
	After shedding of placenta	103	64.38
	1-6 hour after birth	24	15.00
	When calf able to suckle	30	18.75
	Within 1 hour after birth	3	1.87
2.	Feeding after birth when no colostrum is available		
	Milk	146	91.25
	Colostrum from another animal	14	8.75
	Artificial colostrum	00	00.00
3.	Amount of milk feeding (in litre)		
	Just before and after milking (upto 1 litre)	118	73.75
	One teat full (1-2 litre)	28	17.50
	Upto 2-3 litre	14	8.75
4.	When the calf was allowed to suckle		
	Before milking	36	22.50
	Before and after milking	124	77.50

It could be observed from table that majority (77.50%) of respondent use to feed the calf both before and after milking. While only 22.50 percent use to feed only before milking which may just to initiate the suckling reflex resulting in inadequate feeding of the calf. The study of<sup>2</sup> revealed that majority (88.33%) of the respondents irrespective of their herd size, fed colostrum to the new born

calves. It was stated that there was partial adoption of scientific calf management practices in Uttar Pradesh due to lack of awareness among livestock owners about scientific calf management practices<sup>4</sup>.

### Existing management practice of calf

The existing management practices followed during calf rearing by respondents is presented in

table 3. It could be seen that majority (88.12%) of respondents are not taking proper care of navel cord after calving. This results in setting of infection in navel and may lead to navel ill/ joint ill. Similar finding were stated by<sup>9</sup> and observed that 96% of respondents did not practice ligation, cutting and disinfection of the naval cord and it was left to fall off itself naturally. This may also affect the normal growth of the calf. It was observed that the only 13.75, 19.38, 3.75 and 17.25 percent of respondent

in the study area were following deworming, bedding to calf, disbudding and exposure to sunlight. <sup>12</sup>reported that when calf was off feed or when they observed worms in the faeces the respondent dewormed the calves. Tattooing was not performed as the farmers have limited herd so identification of animal is not a problem. It was further seen that 91.25 percent of the respondent used to house the calf with the adults.

**Table 3. Management practices of neonatal calf (n=160)**

S. No.	Calf management practices	Frequency	Percentage
1.	Cutting of navel cord and its management		
	Yes	19	11.88
	No	141	88.12
2.	Deworming of calf		
	Yes	22	13.75
	No	138	86.25
3.	Housing of calf		
	House with adult	146	91.25
	Separate shed for calf	14	8.75
4.	Bedding to calf		
	Yes	31	19.38
	No	129	80.62
5.	Disbudding		
	Yes	6	3.75
	No	154	96.25
6.	Tattooing		
	Yes	0	0.00
	No	160	100.00
7.	Exposure to sunlight in winters to calf after birth		
	Yes	28	17.50
	No	132	82.50

It was stated that the only 11.88 percent of the farmer's practiced ligation/cutting and disinfection of the navel cord<sup>13</sup>. This low percentage was probably due to lack of awareness about the importance of disinfection. Similar finding about colostrum feeding as 7.80 percent of farmers from rural areas, 1.10

percent from semi-urban and 3.30 percent from urban areas followed the practice correctly, which is to feed colostrum within 2 h of birth. These findings were in close conformity with the reports<sup>8</sup> who revealed that more than 64.25 percent of farmers did not follow the cut and disinfect navel cord. Only

35.75 percent farmers cut the naval cord with new blade or knife and tied with thread. Similar findings were also reported by<sup>3</sup>.

### Existing Indigenous Traditional Knowledge (ITK)

The farmers are using their traditional knowledge for calf ailments (Table 4). Majority of them use the feeding of butter milk with salt to calf, followed by feeding of neem paste prepared from neem leaves.

**Table 4. Existing ITKs for Calf diseases**

S. No.	Practices and their ingredient	Dosage/animal
A	Calf scour	
1.	Small quantity of Salt was added to 250 ml of Butter milk	BID for 2 days
2.	50 g neem( <i>Azadirachta indica</i> ) leaves paste was prepared and fed.	QD for 2 day
3.	Half Dasmoodkipudia + 100 g garlic ( <i>Allium sativum</i> ) paste was prepared and fed	QD for 2 day
B	Calf pneumonia	
1.	100 g Jaggery+ 50 g ajwain ( <i>Trachyspermum ammi</i> ) + bedoma were mixed	BID for 2 days
2.	50 g of rashkapur was crushed mixed with Jaggery and fed.	QD for 2 days

For control of calf pneumonia following ITKs mentioned in Table 4 are followed. The most prevalent practices includes a mixture of jaggery, *ajwain* and *bedoma* were fed to calf for two days. The practices are followed by another practice in which a mixture of *rashkapur* and jaggery were mixed and fed to calf.

### Knowledge Gain in calf management through information module

The results of the gain in knowledge are presented in the Table 5. It was observed that before exposure to the module the respondent had a knowledge percentage of 47.43 and which was upgraded to 64.03 after they were exposed to the information module. Difference in pre and post exposure score was taken as an indicator for change in knowledge and thus mean gain in knowledge was 16.60 percent.

**Table 5. Knowledge gain by the respondents in calving management**

S. No.	Items	Knowledge (%)	Z values
1.	Knowledge of respondent before exposure	47.43	
2.	Knowledge of respondent after exposure	64.03	12.86**
3.	Mean Gain in knowledge	16.60	

\*\*Significant at 0.01 level of significance

The data on knowledge were subjected to Z test and it can be inferred that the exposure to the module was effective in improving the knowledge of the respondents as 'z' values significant at 1 percent level. Similar findings were reported by<sup>6</sup>.

### CONCLUSION

The study concluded that the farmers of the study area require information on calf management as it was revealed the concept of preparing and feeding artificial colostrum was not known to the farmers and only 13.75, 19.38, 3.75 and 17.25 percent of respondent in the study area were

following deworming, bedding to calf, disbudding and exposure to sunlight. Thus enhancing the knowledge of respondents using the E information module will have a positive impact on the knowledge and adoption level of the farmers on scientific calf management. Thus by utilizing the ICT tools and making cost effective technologies will help in faster dissemination of desired information to the farmers.

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