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Calf management practices adopted by tribal dairy farmers of North Gujarat

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Abstract
The present study was conducted in Banaskantha district of North Gujarat region of the Gujarat state. Three talukas were selected and five villages from each taluka were selected randomly. From each village 10 respondents were selected randomly those having at least two dairy animal (Cow/Buffalo). Results of this study revealed that, most of respondents were present at the time of calving and took care of the calf after birth. Nearly three forth respondents cleaned and trim the hoof of the calves soon after calving. None of the farmers practiced ligation/cutting with new blade and disinfection of the navel cord. Colostrum feeding to new born calves for their survival was adopted by 100 percent of the respondents but less than fifty respondents practiced within 1.5 hour of birth. Nearly one-third respondents bury the placenta into compost and rest buries it into the pit. All respondents didn't follow weaning practice. No separate housing facility was provided to the calf and tie calf along with the dam. Only one third of the respondents provided calf starter. The study also revealed that majority cent respondents gave anthelmintic to the calves. High cost of feed, low producing animals, lack of knowledge and capitals were the main constraints faced by the tribal livestock owners of the district.

Keywords: Calf rearing practices, adaptation, tribal dairy farmers

Introduction
Calf is an important creature for dam and owner also. In particular for Indian cattle and buffalo, calf is very much essential for letdown of milk and for complete milking of animal. For owner, female calf is a cow/buffalo in future, which can be called as replacement stock which replaces old one and hence owner does not need to purchase new cow/buffalo. And even can earn money by selling surplus pregnant/non-pregnant heifers.

In field condition mortality of calf and age at first calving is higher. This is because farmers are not taking required care and management of calf leading to higher mortality and decreased weight gain which ultimately leading to higher age at calving. Higher age at first calving increases the cost of production. Adoption of scientific calf rearing practices not only prevents the mortality but it increases the production and productivity of the farm by getting optimum milk from the dairy animals, also save the money from purchase of new animals in future and even helps to earn the money by selling surplus heifers. So, looking to this an effort was planned to find out the prevalent gap between farmers practices and scientific practices for calf rearing by the tribal farmers of the Banaskantha district of Gujarat state.

Materials and Method
The investigation was carried out in Banaskantha district. Five villages from each taluka dominated by tribal were purposively selected. From each village 10 respondents those having at least two dairy animals were selected randomly.

Results and Discussion
The results of socio-economic status of tribal farmers of Banaskantha district are presented in table 1 revealed that 68.67 percent respondents belongs to young age group, followed by 22.00 percent respondents belongs to middle age group and remaining 09.33 percent respondents belongs to old age group. Nearly 45.33 percent respondents had educated up to primary level, while 20.00, 10.00, 06.00 percent had education up to secondary, higher secondary and graduate, respectively. However, 18.67 percent respondents were can read and write in local language. 56.66 percent respondents were found to have medium herd size (4-7 animals), whereas 30.67 percent respondents had small herd size (2-3 animals) and rest 12.67 percent respondents had large herd size (above 8 animals).

Majority of tribal dairy farmers had both indigenous and crossbred dairy cattle, where as Mehsana and non-descript Buffalo were mostly reared in their farm.

The results in Table 2 presented about various calf management practices adopted by dairy farmers revealed that majority of respondents (100 percent) attended calving and took care of the calves after parturition. Attending calving is important to guide safe calving so that live calf is delivered and minimum stress to the dam. Present findings are similar to the findings of Rathore (2010) [4] and Kumar and Mishra (2011) [3] reported that all of the respondent attended calving and took care of calves after parturition. Present results were nearly similar to the findings of Sabapara (2015) [5] whom reported 95.00 percent percent. While Yadav (2016) [7] and Godara (2017) [2] reported nearly 70.00 percent respondents attending calving.

More than one-third (72.00 percent) of the respondents were following the cleaning the calf immediately after the birth and trim the hooves of the calves soon after calving and remaining 28.00 percent of the respondents didn't follow this practice. Cleaning of calf is important to prevent coldness and hypothermia. Present findings are similar to the findings of Godara (2017) [2]. In this study it is observed that all of the respondents attend the calving but 72.00 percent clean the calf might be because of a greater number of non-descript animals who has strong maternal behaviour.

None of the farmers practiced ligation/cutting with new blade and disinfection of the navel cord. It is might be due to lack of knowledge and awareness about the importance of this practice that cutting with new blade, ligation and application of antiseptic is very important to check the entry of pathogenic bacteria which may otherwise leads to septicaemia and death of the calf. Hence, more efforts are required to motivate farmers to follow this practice. The results are more or less similar to the findings of Sabapara (2015) [5] and Godara (2017) [2]. However, results are not in agreement with the findings of Rathore (2010) [4] and Yadav (2016) [7] who observed that 37, 85.56 and 35.75 percent of the respondents followed these practices, respectively.

The present study indicated that 100 percent of the respondents followed practice of colostrum feeding to new born calves for their survival. Results obtained are similar to the results reported by Kumar and Mishra (2011) [3] and Sabapara (2015) [5]. Further, the data revealed that scientific recommendation of feeding colostrum to new born calves within 1.5 hour of birth was being practiced by 45.33 percent of the respondents. The results are somewhat higher than the findings of Sabapara (2015) [5] and Godare (2017) [2]. Feeding of colostrum in time i.e. within 1.5 hour after birth is very important for calf to absorb quantum of antibodies (passive immunity) to fight against infection, to get maximum protein and minerals for body growth, laxative nature to expel first faecal material (muconeum) and nutrient richness of the colostrum. Hence, intense efforts are required to educate farmers for the adoption of it.

Respondents were not sure about exact quantity of colostrums to be fed to the calves. However, 52 percent respondents fed *ad lib*, whereas, 20.00, 14.67 and 13.33percent of the respondents fed by half quarter, one quarter, and not sure for the quantity of colostrums, respectively. Present results are similar to the finding of Godare (2017) [2] and lower than the results reported by Kumar and Mishra (2011) [3] and Sabapa (2015) [5]. Scientifically 10.00 percent of the body weight is recommended to feed colostrums for proper body growth and requirements.

Nearly two-third (63.33 percent) respondents bury the placenta into compost and rest 36.67 percent buries it into the pit. Proper and hygienic disposal of placenta is very important and also to keep dog away from newly calved dam and calf. The results are contrary to the findings of Godare (2017) [2] where they observed that 64.50 percent respondents buried the placenta deeply into the ground and remaining throws away the placenta.

Most of the (100 percent) respondents never weaned their calves and let them suckle during entire lactation might be due to a greater number of non-descript animals owned by the most of the respondents who has strong maternal behaviour. As most of the indigenous cattle and buffaloes do not let down their milk without suckling their calf. This practice increases the calving interval in dairy animals. Therefore, to overcome this problem, the practice of weaning calves after three months of age under suitable hygienic conditions is recommended. The results similar to the findings of Godare (2017) [2].

Nearly half of the respondents allowed the calves one teat to suckle the milk, while remaining 50.00 percent of the respondents allowed suckling of half teats of their dams. Majority of the (100 percent) respondents were found to tie calf along with the dam in common shed. No separate housing facility was provided to the calf. It was observed that 67.67 percent respondents provided water twice a day, whereas, remaining 33.33 percent provided once a day.

Only 3.33 percent of the respondents provided calf starter, while 96.67 percent of the respondents did not provide calf starter to the calves. Lower level of adoption is might be due to the low level of awareness of dairy farmers regarding the nutrient requirements of growing calves which could not be met by feeding milk alone. Calf starter is rich in protein which is crucial requirement for body growth. The results are contrary to the findings of Yadav (2016) [7].

Majority (62.67 percent) of the respondents provided green fodders from three months followed by 29.33 and 08.00 percent of the respondents provided green fodders from two and one month after birth, respectively. It might be due to the awareness of dairy farmers regarding incorporation of fodder in the ration of calves which hastens the development of rumen function at early age. The results are not in agreement with the findings of Yadav *et al.* (2016) [7]. They revealed that majority (68.44 percent) respondents provided fodder to their calves at around 2 months of age, while 31.66 Percent respondents provided fodder only after 3 months of age. It was observed that 85.33 percent of the respondents did not follow dehorning, while only 14.67 percent of the respondents followed dehorning during 3-4 week of age of their calves. It might be due to rearing of local cows wherein disbudding is not practiced. In this region dehorning is practiced only in crossbred. The results agree with the findings of Sabapara (2010) [5] and Rathore (2010) [4] who reported 10 and 9.5 percent dehorning, respectively. Whereas, results are not in agreement with the findings of Yadav (2016) [7] reported that 38.00 percent respondents were performing dehorning of their calves.

Internal parasitic infestation is one of the major causes of calf mortality. Hence supplementation of anthelmintic in time is important. It not only prevents the mortality but also helps in better and optimum body weight gain in time. Problems of

parasitism are more common in animals which are reared on complete or partial grazing. Grazing is practiced in tribal areas. The study revealed that 43.33 percent respondents gave anthelmintic to the calves regularly and remaining 56.67 percent did not supplement to control the endoparasites. The result of this practice is indicative of high level of awareness in respondents. The results are similar to the findings of Sabapara (2015) [5].

It was observed that only 13.33 percent of the respondents provided jacketing in order to protect their calves from cold during winter season, while majority (86.67 percent) of the respondents didn't follow these practices. Jacketing in winter season helps to maintain the internal body temperature and improves body weight gain. The present observations are in accordance with the results recorded by Sabapara (2015) [5] and contrary to the findings of Yadav (2016) [7].

It was also observed that majority of the respondents (73.33 percent) practiced castration of male calves, while 16.67 percent of respondents didn't follow this practice. Adoption of castration is higher in studied area might be due to the fact that they need bullock for agricultural purpose in hilly areas. However, the male calves are sent to panjarapole/gaushala after weaning in many parts of the state. The present observations are higher than the findings of Sabapara (2015) [5], Sheikh and Parmar (2015) [6], Yadav (2016) [7], who reported 17.00, 20.00, 33.20 percent respondents adopting castration in male calves, respectively.

Data in table 3 reveled that High cost of feed (100 percent), low producing animals (100 percent), lack of capital (90.00 percent) and knowledge (76.67 percent) were the main constraints faced by the tribal dairy farmers of the Banaskantha district.

Table 1: Socio-economic status of tribal dairy farmers

Sr. No.	Socio-economic status	Dantiwada n= 50	Danta n= 50	Amirgadh n= 50	Overall N= 150
1.	**Age**				
	Young age group (Up to 30 years)	35 (70.00)	32 (64.00)	36 (72.00)	103 (68.77)
	Middle age group (31-50 years)	10 (20.00)	13 (26.00)	10 (20.00)	33 (22.00)
	Old age group (51 and above years)	05 (10.00)	05 (10.00)	04 (08.00)	14 (09.33)
2.	**Education**				
	Can read and write	10 (20.00)	10 (20.00)	08 (16.00)	28 (18.67)
	Primary education (Up to 8th Std.)	29 (58.00)	24 (44.00)	17 (34.00)	70 (45.33)
	Secondary education (8th to 10th Std.)	08 (16.00)	10 (20.00)	12 (24.00)	30 (20.00)
	Higher Secondary education (Up to 11th to 12th Std./ Diploma course)	02 (04.00)	05 (10.00)	08 (16.00)	15 (10.00)
	Graduate	01 (02.00)	03 (06.00)	05 (10.00)	09 (06.00)
3.	**Herd size**				
	Small (2 to 3 dairy animals)	16 (32.00)	15 (30.00)	15 (30.00)	46 (30.67)
	Medium (4 – 7 dairy animals)	29 (58.00)	28 (56.00)	28 (56.00)	85 (56.66)
	Large (8 and above dairy animals)	05 (10.00)	07 (14.00)	07 (14.00)	19 (12.67)

Table 2: Calf management practices adopted by tribal dairy farmers

B.	Scientific calf rearing practices				
		Name of taluka			Overall
		Dantiwada	Danta	Amirgadh	
1.	Are you attending calving?	50 (100.00)	50 (100.00)	50 (100.00)	150 (100.00)
2.	Taking care of dam & calf after calving?	50 (100.00)	50 (100.00)	50 (100.00)	150 (100.00)
3.	Massage of chest	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)
4.	Cleaning and trimming of hoof of the Calf	40 (80.00)	35 (70.00)	33 (66.00)	108 (72.00)
5.	Practiced ligation/cutting with new blade and disinfection of the navel cord	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)
6.	Feeding of colostrum feeding after birth	50 (100.00)	50 (100.00)	50 (100.00)	150 (100.00)
7.	**Time of colostrum feeding after birth**				
	Within 1.5 hrs after birth	15 (30.00)	28 (56.00)	25 (50.00)	68 (45.33)
	After shedding of placenta	35	22	25	82

		(70.00)	(44.00)	(50.00)	(54.67)
8.	**Quantity of colostrum feeding**				
	Half Quarters	05 (10.00)	10 (20.00)	15 (30.00)	30 (20.00)
	One quarter	02 (04.00)	10 (20.00)	10 (20.00)	22 (14.67)
	Not known	23 (66.00)	25 (50.00)	20 (40.00)	68 (52.00)
	Ad lib sucking	10 (20.00)	05 (10.00)	05 (10.00)	20 (13.33)
9.	**Disposal of placenta**				
	Burying into pit	10 (20.00)	20 (40.00)	25 (50.00)	55 (36.67)
	Burying into compost	40 (80.00)	30 (60.00)	25 (50.00)	95 (63.33)
10.	**Quantity of milk feeding to the calf/day**				
	Half teat	25 (50.00)	25 (50.00)	25 (50.00)	75 (50.00)
	One teat	25 (50.00)	25 (50.00)	25 (50.00)	75 (50.00)
11.	**At what age weaning is practiced**				
	02 month	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)
	03 month	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)
	No weaning	50 (100.00)	50 (100.00)	50 (100.00)	150 (100.00)
12.	**Housing facility**				
	Tying along with dam	50 (100.00)	50 (100.00)	50 (100.00)	150 (100.00)
	Alone	00 (00.00)	00 (00.00)	00 (00.00)	00 (00.00)
13.	**Frequency of watering to the calf/day**				
	Once	10 (20.00)	05 (10.00)	05 (10.00)	20 (13.33)
	Twice	40 (80.00)	45 (90.00)	45 (90.00)	130 (67.67)
14.	Feeding of Calf starter?	00 (00.00)	00 (00.00)	05 (10.00)	05 (3.33)
15.	**Age of offering green fodder?**				
	01 month	00 (00.00)	02 (4.00)	10 (20.00)	12 (8.00)
	02 month	15 (30.00)	14 (28.00)	15 (30.00)	44 (29.33)
	03 month	35 (70.00)	34 (68.00)	25 (50.00)	94 (62.67)
16.	Disbudding of calves	05 (10.00)	07 (14.00)	10 (20.00)	22 (14.67)
17.	Deworming of calves	10 (20.00)	15 (30.00)	40 (80.00)	65 (43.33)
18.	**Special care during winter**				
	Jacketing	00 (00.00)	05 (10.00)	15 (30.00)	20 (13.33)
	None	50 (100.00)	45 (90.00)	35 (70.00)	130 (86.67)
19.	Castration of male calves	40 (80.00)	40 (80.00)	30 (60.00)	110 (73.33)

Table 3: Constraints faced by tribal dairy farmers

Sr. No.	Constraints	Name of taluka			
		Dantiwada	**Danta**	**Amirgadh**	**Overall**
1.	Lack of knowledge	35 (70.00)	35 (70.00)	35 (70.00)	115 (76.67)
2.	Cost of feed is high	50 (100.00)	50 (100.00)	50 (100.00)	150 (100.00)
3.	Lack of capital	45 (90.00)	45 (90.00)	45 (90.00)	135 (90.00)
4.	Low milk producing animals	50 (100.00)	50 (100.00)	50 (100.00)	150 (100.00)
5.	Lack of Timely veterinary service	25 (50.00)	15 (30.00)	15 (30.00)	55 (36.67)

Conclusion

Overall it can be concluded that there is no much difference in between taluka for the adoption of improved calf management practices. However, majority respondents belongs to young age group, because of young age tribal farmers had less experienced than middle or old age group. It might be responsible for lower adoption of improved calf rearing practices. Hence, efforts should be made to organised dairy farming training to the rural youth of the tribal youth of Banaskantha district.

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