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## Comparative study on buffalo calf rearing and milking management practices in rural, semi-urban and urban areas of Krishna district in Andhra Pradesh

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### Abstract

The present study was carried out in rural (100), semi-urban (100) and urban (50) areas of Krishna district. Colostrum feeding to new born calf within one to two hours of birth was practiced by majority of urban (94%), rural (76%) and semi-urban (68%) milk producers. Most of the rural (67%) and semi-urban (60%) milk producers allowed calf to take milk from one quarter of the udder. No rural milk producer adopted weaning of buffalo calves. Regular deworming and vaccination of calves was practiced by majority of urban, semi-urban and rural milk producers in the study area. Full hand method of milking was adopted by majority of urban (60%), semiurban (45%) and rural (38%) milk producers. No respondent adopted machine milking in buffaloes. Washing of udder and utensils with clean water before milking was adopted by all the milk producers. All the milk producers (100%) were not following the strip cup test before milking, dipping of teats in povidine iodine after milking and dry cow therapy in the study area.

**Keywords:** Buffalo, calf rearing, milking management

### Introduction

Calves are the future progeny of livestock industry. Scientific management of calf rearing plays a crucial role in dairy development. The success of dairy enterprise depends on better managerial practices and survival of the calf crop produced. High survival rate in a dairy farm helps to increase the selection pressure which is one of the main factor controlling genetic gain and profitable returns. Calf care is not only essential for sustenance of the dairy herd, but also essential in the wake of preserving and maintaining proven germ plasm. Mortality of calf is an important trait both for breeding and economic point of view in dairy enterprise. The first month of the Buffalo calf's life is very crucial and it is found that the calf mortality is as high as 19.5% (Sreedhar *et al.*, 2010) [19].

Milking management can be regarded as one of the most important and crucial activities in the milk production chain. Much work has been done on the milking management of dairy cattle, sheep and goat, but comparatively little research data is available on the milking management of buffaloes [2]. Therefore the present study was conducted to evaluate the calf and milking management practiced followed by the farmers in rural, semi urban and urban areas.

### Materials and Methods

The Krishna district was selected purposively because the district stands third place in the Andhra Pradesh state in the year 2009-10. Buffaloes are selected over cattle for the study because buffaloes contribute 91.25 per cent to the total milk production in the Krishna district. A multi stage stratified random sampling procedure was used for the selection of villages and wards in the Krishna district. The Krishna district was divided into rural, semi-urban and urban areas. The rural area of the district had four revenue divisions namely Machilipatnam, Gudiwada, Nuzvid and Vijayawada. Five mandals were selected randomly from each revenue division and a total of 20 mandals were selected. One village was randomly selected from each mandal. Five buffalo milk producers were selected from each village at random. A total number of 100 buffalo milk producers were selected from 20 villages in the rural area of the district. The district had five Municipalities namely Machilipatnam, Gudiwada, Nuzvid, Pedana and Jaggaipeeta which were considered as semi-urban areas. 20 buffalo milk producers (from each municipality four wards, from each ward five milk producers) were selected at random.

A total of 100 semi-urban buffalo milk producers were selected from five municipal areas. Similarly 50 urban buffalo milk producers (Ten divisions, from each division five milk producers) were selected from Vijayawada Municipal Corporation. Thus 100 buffalo milk producers from rural, 100 buffalo milk producers from semi-urban and 50 buffalo milk producers from urban areas constituted the total sample size for the study. The data were collected by using a pretested questionnaire through personal interview and the data were analyzed by using statistical methods according to Snedecor and Cochran (1994)<sup>[17]</sup>.

## Results and discussion

### Buffalo calf rearing practices

From table 1, it could be observed that cutting of navel cord was practiced by majority of urban (66%) and semi-urban (60%) milk producers, whereas 37 per cent of rural milk producers adopted this practice in the study area. The results of the present study were higher than the observations of Rathore and Kachwaha (2009)<sup>[10]</sup> and Sinha *et al.* (2010)<sup>[16]</sup> who reported that this practice was higher in semi-urban (14.4%) and urban (11.1%) area.

The results were not in agreement with Maousami *et al.* (2013)<sup>[7]</sup> and Sah *et al.* (2003)<sup>[12]</sup>. Application of tincture iodine to navel was not practiced by any milk producer in the rural, semi-urban and urban areas of the study area. This result was similar with Patil and patil (2014)<sup>[9]</sup> only one per cent of the farmers applied tincture iodine to navel cord. Colostrum feeding to new born calf within one to two hours of birth was practiced by majority of urban (94%), rural (76%) and semi-urban (68%) milk producers in the study area. These results were higher than the findings of Sinha *et al.* (2010)<sup>[16]</sup> and Sreedhar (2009)<sup>[18]</sup>.

It was observed that majority of rural (67%) and semi-urban (60%) milk producers allowed calf to take milk from one quarter of the udder in the study area. It was higher than the findings of Sreedhar (2009)<sup>[18]</sup>. The higher adoption rate of this practice in the study area might be due to possession of large number of graded Murrah and Murrah calves.

Very few milk producers in semi-urban (16%) and urban (20%) areas practiced weaning, whereas no rural milk producer adopted this practice. It was nearer to the observations of Sinha *et al.* (2010)<sup>[16]</sup> and Patil and Patil (2014)<sup>[9]</sup>. Very few milk producers in the urban (24%), semi-urban (14%) and rural (7%) areas adopted feeding of calf starter to calves in the study area. It was similar to the observations of Singh *et al.* (2011)<sup>[15]</sup> who reported that most of the farmers did not feed any concentrate to calves.

Regular deworming of calves was practiced by majority of urban (76%), semiurban (65%) and rural (62%) milk producers in the study area. It was higher than the findings of Rathore and Kachwaha (2009)<sup>[10]</sup> and Sreedhar (2009)<sup>[18]</sup> whereas Singh *et al.* (2015) reported that 93 per cent of farmers adopted deworming to their female calves, however deworming was not done in male calves in Patiala district of Punjab. Vaccination of calves against HS, FMD was adopted by more than 90 per cent of the milk producers in rural, semi-urban and urban areas of the study area. These findings were higher than the observations of Rathore and Kachwaha (2009)<sup>[10]</sup> and Manivannan *et al.* (2009)<sup>[6]</sup>.

The higher rate of adoption of deworming and vaccination of calves in the study area might be due to availability of larger number of veterinary institutions and more valuable graded Murrah buffalo calves.

### Milking management practices

From Table 2 revealed that all the milk producers adopted hand method of milking in rural, semi-urban and urban areas of study area. No respondent adopted machine milking in buffaloes in the study area. These findings were in agreement with the results of Kumar and Mehla (2011)<sup>[5]</sup> who reported that no one practiced machine milking in the rural areas of Ferozpur district of Punjab. Full hand method of milking was adopted by majority of urban (60%), semiurban (45%) and rural (38%) milk producers in the study area. Overall only 19.2 per cent of milk producers practiced knuckling method of milking in buffaloes. The results were lower than Bimal *et al.* (2013)<sup>[2]</sup> and higher than Kishore *et al.* (2013)<sup>[4]</sup>. It was more similar to the findings of Kumar and Mehla (2011)<sup>[5]</sup>. However Sinha *et al.* (2010)<sup>[16]</sup> reported that full hand method of milking was followed by 18.9, 16.7 and 46.7 per cent of farmers in rural, semi-urban and urban areas, respectively, and majority of rural and semi-urban farmers followed knuckling method. Ahirwar *et al.* (2010)<sup>[1]</sup> also reported that 11.33 and 8 per cent of farmers followed full hand method in rural and urban areas, respectively. The rate of adoption of full hand method of milking was higher in the study area. It might be due to more experience of farmers in milking buffaloes.

It was found that all the milk producers adopted twice a day milking in rural, semi-urban and urban area of the study area. It was in agreement with the findings of Ahirwar *et al.* (2010)<sup>[1]</sup>, whereas Sinha *et al.* (2010)<sup>[16]</sup> reported that 55.4 per cent farmers milked once and only 41.4 per cent twice a day in the rural area, whereas in semi-urban and urban areas 73.3 and 97.8 per cent of farmers, respectively, milked the animals twice a day. It was also found that majority of milk producers used their family labour for milking the buffaloes in rural (98%), semi-urban (85%) and urban (78%) areas of the study area, whereas 22 per cent of milk producers in the urban area engaged hired labour for milking. Male and female family members had experience in milking buffaloes in this study area.

It was found that 20 and 10 per cent of urban and semi-urban milk producers, respectively, used oxytocin injection for letdown of milk in the buffaloes, whereas it was not followed in rural areas of the study area. It was mostly similar to the findings of Sinha *et al.* (2010)<sup>[16]</sup> who reported that 10 and 2.2 per cent of urban and semi-urban milk producers, respectively, used injection for letdown of milk in buffaloes in Bareilly district of Uttar Pradesh. Kumar and Mehla (2011)<sup>[5]</sup> also found that 30 per cent of respondents used oxytocin injection for letdown of milk.

Washing of animals before milking was practiced by majority of the milk producers in urban (66%), rural (53%) and semi-urban (50%) areas of the study area. It was not in agreement with the findings of Kalyankar *et al.* (2004)<sup>[3]</sup> who reported that none of the farmers followed cleaning of whole animals before milking in Parbhani district of Maharashtra. Washing of udder and utensils with clean water before milking was adopted by all the milk producers (100%) in the study area. These findings were in agreement with the observations of Kalyankar *et al.* (2004)<sup>[3]</sup>, Shitole *et al.* (2009)<sup>[14]</sup> and Sabapara *et al.* (2006)<sup>[11]</sup> who reported that washing of udder, teats and utensils with clean water before milking was practiced by 100 per cent of farmers, whereas Sinha *et al.* (2010)<sup>[16]</sup> observed that udder washing was followed by 90.0, 93.3 and 100 per cent of farmers in rural, semi-urban and urban areas, respectively.

It was found that all the milk producers (100%) did not follow the strip cup test before milking, dipping of teats in povidine iodine after milking and dry cow therapy in the study area. It was in agreement with the findings of Rathore and Kachwaha (2009) [10], Kumar and Mehla (2011) [5] and Sabapara *et al.*(2006) [11] who reported that no one used dip or wipe the teats after milking in the rural areas of Ferozepur district of Punjab. It might be due to lack of awareness about the importance of practices among the milk producers. It might be predisposing the buffaloes for mastitis in the study area. It was observed that majority of rural milk producers (62%) marketed the milk to the district cooperative dairy union this

was in agreement with Sabapara *et al.*(2006) [11], whereas majority of urban milk producers (50%) marketed the milk directly to the consumer followed by cooperative dairy. Meena *et al.* (2006) [8] reported that 56.33 per cent of farmers sold milk to the milk dairy cooperatives. The results was not in agreement with Toamr *et al.* (2002) [20]. In the present study, it indicated that urban milk producers preferred to sell the milk directly to the consumer so as to get more income, whereas the rural milk producers sold the milk to the dairy cooperatives which provided assured market and reasonable price for milk even the remote rural areas.

**Table 1:** Buffalo calf rearing practices adopted by buffalo milk producers

S. No.	Calf rearing practices	Rural (N=100)%	Semi-urban (N=100)%	Urban (N=50)%	Overall (N=250)%	
1.	Cutting of navel cord	Practiced	37	60	66	52.00
		Not practiced	63	40	34	48.00
2.	Application of tincture iodine to navel	Practiced	0	0	0	0
		Not practiced	100	100	100	100
3.	Colostrum Feeding to new born calf within 1-2 hours	Practiced	76	68	94	76.4
		Not practiced	24	32	6	23.6
4.	Feeding of milk to calves per day	1-2 lit	33	40	54	40.00
		One quarter	67	60	46	60.00
		Practiced	0	16	20	10.40
5.	Weaning of calves	Not practiced	100	84	80	89.60
		Practiced	7	14	24	13.20
6.	Feeding of calf starter	Not practiced	93	86	76	86.80
		Practiced	62	65	76	66.00
7.	Regular deworming of calves	Not practiced	38	35	24	34.00
		Practiced	96	98	90	95.60
8.	HS vaccination of calves	Not practiced	4	2	10	4.40
		Practiced	96	97	90	95.20
9.	FMD vaccination of calves	Not practiced	4	3	10	4.80
		Practiced				

**Table 2:** Milking management practices adopted by respondents in buffaloes

S. No.	Milking practices	Rural (N=100)%	Semi-urban (N=100)%	Urban (N=50)%	Overall (N=250)%	
1.	Method of milking	Hand	100	100	100	100
		Machine	0	0	0	0
2.	Method of hand milking	Full hand	38	45	60	45.20
		Knuckling	25	17	12	19.20
		Stripping	37	38	28	35.60
3.	Frequency of milking	Twice	100	100	100	100
		Thrice	0	0	0	0
4.	Labour for Milking of animal	Family labour	98	85	78	88.80
		Hired labour	2	15	22	11.2
5.	Oxytocin injection for letdown of milk	Practiced	0	10	20	8.00
		Not practiced	100	90	80	92.00
6.	Washing of animals before milking	Practiced	53	50	66	54.40
		Not practiced	47	50	34	45.6
7.	Washing of udder and utensils with water	Practiced	100	100	100	100
		Not practiced	0	0	0	0
8.	Strip cup test	Practiced	0	0	0	0
		Not practiced	100	100	100	100
9.	Dipping of teats in povidine iodine after milking	Practiced	0	0	0	0
		Not practiced	100	100	100	100
10.	Dry cow therapy	Practiced	0	0	0	0
		Not practiced	100	100	100	100
11.	Marketing of milk	Consumer	12	42	50	31.60
		Middle man	6	8	6	6.80
		Cooperative dairy	62	37	24	44.40
		Private dairy	20	13	20	17.2

## Conclusion

The scientific way of calf rearing practices like feeding of calf starter, weaning of calves and provision of milk according to the body weight need to be popularized in all the three areas of study area. Training programmes needed for the farmers on full hand method of milking, adverse effects of usage of oxytocin injections for letting down of milk, use of strip cups for detection of mastitis, teat dipping of teats in povidine iodine after milking and dry cow therapy for ensuring clean milk production and reduces the incidences the mastitis and detection of sub clinical mastitis in buffaloes.

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