



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; SP-11(4): 1587-1593  
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[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 19-02-2022  
Accepted: 21-03-2022

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## A comparative study on buffalo rearing practices by owners in two Taluqas of North Karnataka region of India

**Awate S, Biradar SC, Waghmare P, Vivek MP, Prakash KR, Ananth RD, Shrikanth D and Ashwini K**

### Abstract

The present study was conducted to document the buffalo rearing practices by owners in two taluqas of North Karnataka. A total of 90 buffalo farmers, 45 from each taluqa were randomly selected for survey. All buffalo owners attended calving and cared for the calves after parturition, fed inadequate colostrum to new born calves within time, they didn't practice naval ligation after parturition, and weaned calves at three months of age. The farmers followed AI in mid heat, and their AFC was 3-4 years with an ICP of 12-18 months. Adequate housing provisions were made based on need and tradition. Green fodder was not specially cultivated for feeding and no provisions were made for feeding of extra salt, mineral mixture, bypass protein. Knuckling though wrong was the milking method adopted and treatment of adult buffaloes was mostly done by empirical knowledge and local resources and not by a Vet.

**Keywords:** Feeding, breeding, healthcare, calf rearing, marketing practices, buffaloes farmers

### Introduction

Buffalo is one of the most important dairy animals concentrated largely in tropical and sub tropical countries. They are the main stay of dairy industry, especially in Asia and form the frail rural economy in developing countries across the world. Water buffalo (*Bubalus bubalis*) can rightly be called India's black gold because of its importance as the key dairy animal. It has made a major contribution to agrarian economy of India from livestock. Animal husbandry practices play a vital role in the improvement of animal productivity and livestock production. Scientific management will help in reducing mortality and morbidity of livestock which indirectly results in their health improvement. Considering the above mentioned facts, the current study was carried out with the specific objective to analyze the feeding, breeding, management and health care practices adopted by buffalo farmers in the North Karnataka region of India.

### Materials and Methods

The present study was conducted for a period of three months, in Afazlpur and Aland taluqas of Kalaburagi district of Karnataka. Personal interview technique using standard questionnaire was used as a tool through which first-hand information was collected. This district was selected due to familiarity of researcher with the area and local language. Random sample size of 90 buffalo owners (45 from each Taluqa) were selected for the study. The variables under study were selected on the basis of extensive review of literature related to the topic of research and in consultation with experts. The semi-structured interview schedule was prepared keeping in view the objectives of the study and was common for all buffaloes owners. Before collection of data, interview schedule was pre-tested. Apart from interview schedule, observation technique was also used for data collection. Wherever required, data from secondary source was also collected. The Survey was conducted at their home with the help of local people from villages. Objectives of the study were explained with a view to facilitate giving correct responses. Assurance was given that the data collected were utilized for the purpose of research only.

## Results and Discussion

### Calf rearing practices

**Table 1:** Buffalo owners according to calf rearing practices followed (n=90)

Sl. No	Particulars	Afzalpur	Aland	Overall
1	<b>Attended calving and took care of the calves after parturition</b>			
	Yes	100 (45)	100 (45)	100 (90)
	No	0	0	0
2	<b>Practiced ligation/ cutting and disinfection of the navel cord</b>			
	Yes	11.11 (5)	6.66 (3)	8.88 (8)
	No	88.88 (40)	93.33 (42)	91.11 (82)
3	<b>Feeding of colostrum to new born calf within time</b>			
	Yes	97.77 (44)	95.55 (43)	96.66 (87)
	No	2.22 (1)	4.44 (2)	3.33 (3)
4	<b>Deworming of calves</b>			
	Yes	77.77 (35)	73.33 (33)	75.55 (68)
	No	22.22 (10)	26.66 (12)	24.44 (22)
5	<b>Weaning calves at the age of</b>			
	Calf allowed to suckle	84.44 (38)	86.66 (39)	74.44 (67)
	2 months	0	0	0
	3 months	0	0	0
	> 3 months	15.55 (7)	13.33 (6)	14.44 (13)
6	<b>Number of teats allowed for suckling</b>			
	One teat	82.22 (37)	91.11 (41)	86.66 (78)
	Two teats	17.77 (8)	8.88 (4)	13.33 (12)
7	<b>Started giving green fodder after attaining age of</b>			
	1 month	0	0	0
	2 months	2.22 (1)	4.44 (2)	3.33 (3)
	3 months	97.77 (44)	95.55 (43)	96.66 (87)
8	<b>Started giving concentrate after attaining age of</b>			
	1 month	0	0(0)	0
	2 months	2.22 (1)	4.44 (2)	3.33 (3)
	3months	97.77 (44)	95.55 (43)	96.66 (87)

Percentages are mentioned without bracket (Frequencies are mentioned in bracket).

Table 1 shows that all buffalo owners attended calving and cared for the calves after parturition. Overall 91.11 per cent respondents did not practice ligation and disinfection of the navel cord and 8.88 per cent respondents practiced ligation and disinfection of the navel cord. 96.66 per cent of respondents did feed colostrum to new born calves within time. These results are in accordance with study of Rathore and Kachwaha (2009) <sup>[10]</sup> and G. Chandra Sekhar Reddy (2016) <sup>[2]</sup>. But contrary findings were reported by Yadav *et al.* (2016) <sup>[16]</sup> and Pata Bharat A (2018) <sup>[9]</sup>. 75.55 per cent of the respondents dewormed calves on a regular basis, while 24.44 per cent did not. Majority of the buffalo owners (82.22%) allowed to suckle calf only one teat of their dam followed by

17.77 per cent who allowed suckling of two teats of their dam in Afzalpur taluqa. 86.66 per cent of the respondents allowed suckling calf only one teat of their dam followed by 13.33 per cent buffalo owners allowed to suckle calf two teats of their dam. Overall 96.66 per cent respondents started to give green fodder on attaining 3 months of age followed by 3.33 per cent respondents started to give green fodder on attaining 2 months of age. 96.66 per cent respondents started to give concentrate on attaining age of 3 months and 3.33 per cent started to give at 2 months of age.

### Breeding management practices

**Table 2:** Buffalo owners according to breeding practices followed. (n=90)

Sl. No.	Particulars	Afzalpur	Aland	Over all
1	<b>Method of Breeding</b>			
	Natural	17.77 (8)	24.44 (11)	25.55 (23)
	A.I.	66.66 (30)	60.00 (27)	63.33 (57)
	Both	15.55 (7)	15.55 (7)	15.55 (14)
2	<b>Stage of estrus for insemination/ service</b>			
	Early heat	11.11 (5)	11.11 (5)	11.11 (10)
	Mid heat	64.44 (29)	68.88 (31)	66.66 (60)
	Late heat	24.44 (11)	20.00 (9)	22.22 (20)
3	<b>Pregnancy diagnosis</b>			
	Yes	84.44 (38)	73.33(33)	78.88 (71)
	No	15.55 (7)	26.66 (12)	21.11 (19)
4	<b>Treatment of anoestrous/repeaters</b>			
	Yes	97.77 (44)	93.33 (42)	95.55 (86)
	No	2.22 (1)	6.66 (3)	4.44 (4)
5	<b>Age at first calving</b>			
	between 3-4years	75.55 (34)	73.33 (33)	74.44 (67)
	more than 4years	24.44 (11)	26.66 (12)	25.55 (23)
6	<b>Inter calving period</b>			

	12 -18 months	84.44 (38)	82.22 (37)	83.33 (75)
	More than 18months	15.55 (7)	17.77 (8)	16.66 (15)

Percentages are mentioned without bracket (Frequencies are mentioned in bracket).

Table 2 shows that 63.33 per cent of buffalo owners were following artificial insemination and 25.55 per cent of buffalo owners following natural method of breeding and 15.55 per cent of buffalo owners were practicing of both natural and artificial insemination methods for breeding. The reason for the above might be availability of good A.I service facility availability. These findings were in agreement with findings of G. Chandra Sekhar Reddy (2016)<sup>[2]</sup>, Khadda *et al.* (2017)<sup>[4]</sup>, but contrary to the findings of Kushwaha *et al.* (2007)<sup>[7]</sup>, Sunil *et al.* (2011)<sup>[12]</sup> and Pata Bharat A (2018)<sup>[9]</sup> who reported that majority of farmers preferred natural service for breeding their buffaloes. 66.66 per cent buffalo owners bred their buffaloes in the mid heat stage, followed by 22.22 per cent in late heat stage and 11.11 per cent who bred their

buffaloes in the early heat stage. 78.89 per cent farmers per cent buffalo owners adopted practices to diagnose pregnancy of buffaloes followed by 21.12 per cent buffalo owners did not practice to diagnose pregnancy of buffaloes. 95.55 respondents practiced to treat anoestrus of buffaloes. Rest of 4.44 per cent respondents did not practice to treat anoestrus of their buffaloes. In Afzalpur 75.55 per cent and in Aland 73.33 per cent of respondent's expressed that buffaloes first calved between 3-4 years of age. In Afzalpur most of the respondents said 84.44% had calving interval for 12-18 months and in Aland 82.22% of buffaloes had calving interval for 12-18 months.

### Housing management practices

**Table 3:** Buffalo owners according to housing practices followed (n=90)

Sl. No	Particulars	Afzalpur	Aland	Overall
<b>Location of shed</b>				
1	Inside dwelling house	6.66 (3)	4.44 (2)	5.55 (5)
	Separate from dwelling house	93.33 (42)	95.55 (43)	94.44 (85)
<b>Types of floor</b>				
2	Kuccha	64.44 (29)	71.11 (32)	67.77 (61)
	Pucca	35.55 (16)	28.88 (13)	32.22 (29)
<b>Slope in floor</b>				
3	Yes	35.55 (16)	28.88 (13)	32.22 (29)
	No	64.44 (29)	71.11 (32)	67.77 (61)
<b>Drainage channel / pit</b>				
4	Yes	35.55 (16)	28.88 (13)	32.22 (29)
	No	64.44 (29)	71.11 (32)	67.77 (61)
<b>Manger feeding</b>				
5	Yes	86.66 (39)	82.22 (37)	84.44 (76)
	No	13.33 (6)	17.77 (8)	15.55 (14)
<b>Features of roof of shed</b>				
6	Single slope	100 (45)	100 (45)	100 (90)
	Double slope	0	0	0
<b>Other ( Summer management practices)</b>				
7	Wallowing	0	0	0
	Splashing of water	20.00 (9)	17.77 (8)	18.88 (17)

Percentages are mentioned without bracket (Frequencies are mentioned in bracket)

Table 3 shows that majority of respondents (94.44%) had a buffalo shed separate from their home, while the rest (5.55%) had a shed that was inside their home. Kuccha floor is found in the majority of respondents' sheds (67.78%), followed by pucca floor in 32.22 per cent of buffalo sheds. 67.78 per cent of buffalo sheds had a slope in the floor, while 32.22 per cent did not have sloped floor. 32.22 per cent of sheds had drainage channels/pits, whereas the remaining 67.78 per cent did not have drainage channel/pit. Overall 84.44 per cent practiced manger feeding followed by 15.55 per cent did not practice manger feeding. These findings are in contrary to Vranda *et al.* (2017)<sup>[15]</sup> who found that the manger was not provided by majority (54.44%) of the farmers and used to

feed on the ground. In Afzalpur and Aland 100 per cent buffalo shed contained single slope roof and none of the buffalo shed contained double slope roof. In Afzalpur and Aland majority of the respondents did not adopting summer management practices, where as 20 per cent and 17.77 per cent of buffalo owners in Afzalpur and Aland respectively, practiced of splashing of water on buffaloes to reduce heat stress. These results are contrary to Kishore *et al.* (2013)<sup>[8]</sup> who reported that as a part of summer management, 51 per cent farmers allowed their buffaloes to wallow in the village tanks during the hotter parts of the day and 49.16 per cent farmers washed their animals by splashing water manually and Pata Bharat A (2018)<sup>[9]</sup>.

## Feeding management practices

**Table 4:** Buffalo owners according to feeding practices followed (n=90)

Sl. No	Particulars	Afzalpur	Aland	Overall
1	<b>Feeding system of animals</b>			
	Stall feeding	8.88 (4)	6.66 (3)	7.7 (7)
	Only Grazing	28.88 (13)	37.77 (17)	33.33 (30)
	Both (stall + grazing)	62.22 (28)	55.55 (25)	58.88 (53)
2	<b>Cultivation of green fodder</b>			
	Yes	20.00 (9)	15.55 (7)	17.77 (16)
	No	80.00 (36)	84.44 (38)	82.22 (74)
3	<b>Feeding of common salt</b>			
	Yes	28.88 (13)	20.00 (9)	24.44 (22)
	No	71.11 (32)	80.00 (36)	75.00 (68)
4	<b>Feeding of mineral mixture</b>			
	Yes	2.22 (1)	0	2.22(1)
	No	97.77 (44)	100 (45)	98.88 (89)
5	<b>Type of green fodder</b>			
	Maize	20.00 (9)	15.55 (7)	17.77 (16)
	naturally grown grasses	68.88 (31)	77.77 (35)	73.33 (66)
	Other green fodder	11.11(5)	6.66(3)	8.88(8)
6	<b>Type of dry fodder</b>			
	Sorghum	88.88 (40)	86.66(39)	87.77(79)
	as per the availability	11.11(5)	13.33 (6)	12.22 (11)
7	<b>Bypass protein /fat feeding</b>			
	Yes	0	0	0
	No	100 (45)	100 (45)	100 (90)
8	<b>Green fodder fed</b>			
	As such	88.88 (40)	93.33 (42)	91.11 (82)
	Chaffed	11.11 (5)	6.66 (3)	8.88 (8)
9	<b>Type of concentrate</b>			
	home made	82.22 (37)	86.66 (39)	84.44 (76)
	Compound cattle feed	4.44 (2)	11.11 (2)	11.11 (4)
	None	13.33 (6)	8.88 (4)	11.11 (10)

Percentages are mentioned without bracket (Frequencies are mentioned in bracket).

Majority of the buffalo owners (58.89%) practiced both (stall+ grazing), followed by 33.33 per cent of farmers practiced only grazing and 7.78 per cent who practiced stall feeding (Table 4). (82.22 per cent) cultivated green fodder followed by 17.78 per cent farmers did not cultivate green fodder. These findings are similar to findings of Dhaliwal and Dhillon (2017) <sup>[1]</sup> who found that the majority of respondents (58%) used the individual feeding system, cultivated fodder crops (68%) for feeding to dairy animals all year, and only 25% of farmers produced non-legume fodder, and Kumar *et al.* (2017) <sup>[6]</sup> who reported that the majority (80%) of buffalo farmers grew fodder for their animals. (75.56%) did not feed salt to buffaloes while 24.44 per cent buffalo owners fed salt to buffaloes. (98.89 per cent) did not feed mineral mixture to buffaloes while 2.22 per cent buffalo owners fed mineral mixture to buffaloes. In Afzalpur most of respondents (68.89 per cent) offered naturally grown grasses as green fodder followed by 20.00 respondents offered 20.00 as green fodder followed by 11.11 per cent respondents also offered other

green fodder to their buffaloes. In Aland 77.77 per cent respondents offered naturally grown grasses as green fodder to buffaloes followed by 15.55 respondents offered maize as green fodder followed by 8.89 per cent respondents also offered other green fodder. (87.78%) offered sorghum hay as dry fodder followed by 12.22 respondents offered dry fodder as per availability. In both Afzalpur and Aland 100 per cent of respondents did not offer bypass fat/protein to their buffaloes. 91.11 per cent respondents offered as such green fodder followed by 8.88 per cent respondents offered chafed green fodder to their buffaloes. (84.44 per cent) fed home made as concentrate followed by 4.44 per cent respondents offered compound cattle feed as concentrate and 11.11 per cent did not feed concentrate to their buffaloes. These results were in support with the results of Vijay *et al.* (2015) <sup>[14]</sup>, but contrary to Pata Bharat A (2018) <sup>[9]</sup>, who observed that Cotton seed cake was fed as concentrate by the majority of respondents (71.67%), compound cow feed was fed by 4.66 per cent, and 23.67 per cent did not feed concentrate to their buffaloes.

## Milking management practices

**Table 5:** Buffalo owners according to milking management practices followed.

Sl. No	Particulars	Afzalpur	Aland	Overall
1	<b>Method of milking</b>			
	Full hand	6.66 (3)	2.22 (1)	4.44 (4)
	Stripping	11.11 (5)	6.66 (3)	8.88 (8)
	Knuckling	82.22(37)	91.11(41)	86.66 (78)
2	<b>Milking habit</b>			
	Dry hand	0	0	0
	Wet hand	100 (45)	100 (45)	100 (90)
3	<b>Stripping at the end of milking</b>			
	Yes	100 (45)	100 (45)	
	No	0	0	0
4	<b>Frequency of milking</b>			
	Two times	100 (45)	100 (45)	
	Three times	0	0	0
5	<b>Clean udder and teats before milking</b>			
	Yes	100 (45)	100 (45)	
	No	0	0	0
6	<b>Wash hand before milking</b>			
	Yes	100 (45)	100 (45)	
	No	0	0	0
7	<b>Teat dipping followed</b>			
	Yes	0	0	
	No	100 (45)	100 (45)	
8	<b>If the buffalo do not let down milk after the death of calf</b>			
	Offer concentrate feed	84.44 (38)	88.88 (40)	86.66 (78)
	Teat Manipulation	15.55(7)	11.11 (5)	13.33 (12)
	Dummy calf	0	0	0
9	<b>Cleaning of milking utensils</b>			
	Hot water	20.00 (9)	15.55 (7)	17.77 (16)
	Tap water	80.00 (36)	84.44 (38)	82.22 (74)
10	<b>Disposal of Milk</b>			
	Co-operative society	20.00 (9)	26.66 (12)	23.33 (21)
	Consumers	68.88 (31)	60.00 (27)	64.44 (58)
	Middle man	0	0	0
	Home use	11.11 (6)	13.33 (5)	12.22 (11)
11	<b>Test for mastitis diagnosis</b>			
	Yes	0	0	0
	No	100 (45)	100 (45)	100 (90)

Percentages are mentioned without bracket (Frequencies are mentioned in bracket)

Table 5 shows that in Afzalpur the majority of respondents (82.22%) milked buffaloes using the knuckling method, followed by 11.11% milking buffaloes using the stripping method, and 6.66 per cent milking buffaloes using the full hand method. In the Aland, the majority of respondents (91.11%) milked buffaloes using the knuckling method, followed by 6.67 per cent using stripping method, and 2.22 per cent using the full hand method. These findings are similar to Pat Bharat A (2018)<sup>[9]</sup>, Tewari *et al.* (2018)<sup>[13]</sup> and contrary to G. Chandra Sekhar Reddy (2016)<sup>[2]</sup> who discovered that all categories of milk producers in the research area used the hand method of milking. In the case of buffaloes, no respondents used machine milking. Majority of the commercial milk producers (58%), small farmers (33%), and landless milk producers (40%) used the Fullhand method of milking. Small farmers (51%), landless (44%), and commercial (40%) milk producers used the knuckling method

of milking buffaloes. 100 per cent of respondents in Afzalpur and Aland milked with their wet hand, strip at the end of milking, milked their buffaloes two times in a day, cleaned their udders and teats before milking. 100 per cent of respondents in Afzalpur and Aland washed their hands before milking, did not practice dipping teats in antiseptic solution. Overall 86.66 per cent buffalo owners offered concentrate for letting down of milk and 13.33 per cent followed teat manipulation to let down milk. No one kept dummy calf if the buffalo did not let down milk. Overall, 82.2 per cent of buffalo owners washed their milking utensils using tap water, where as 17.77 per cent used hot water to clean their milking utensils. 64.44 per cent of buffalo owners delivered milk to domestic consumers, 23.33 per cent of farmers delivered milk in cooperative societies, whereas 12.22 per cent stored milk for personal use. No buffalo owners in Afzalpur and Aland did not practiced mastitis diagnosis testing.

**Health management practices****Table 6:** Buffalo owners according to health management practice (n=90)

Sl. No	Particulars	Afzalpur	Aland	Overall
<b>Vaccination of animals</b>				
1	Yes	91.11 (41)	88.88 (40)	90 (81)
	No	8.88 (4)	11.11 (5)	10.00 (9)
<b>If yes which disease</b>				
2	F.M.D.	33.33 (5)	88.88 (40)	50.00 (45)
	FMD+HS	80.00 (36)	0	40.00 (36)
	No	8.88(4)	11.11(5)	10.00 (9)
<b>Deworming of buffaloes</b>				
3	Yes	13.33 (6)	11.11(5)	12.22 (11)
	No	86.66 (39)	88.88 (40)	87.77 (79)
<b>Cleaning interval of water trough and mangers</b>				
4	Daily	84.44 (38)	80 (36)	82.22 (74)
	Alternate day	13.33 (6)	17.77 (8)	15.55 (14)
	Weekly	0	0	0
<b>Cleaning interval of animal shed</b>				
5	Daily	4.44 (2)	4.44 (2)	4.44 (4)
	Alternate day	11.11 (5)	15.55 (7)	13.33 (12)
	Weekly	84.44 (38)	82.22 (37)	83.33 (75)
<b>Isolation of sick animals from healthy ones</b>				
6	Yes	82.22 (37)	77.77 (35)	80.00 (72)
	No	17.77 (8)	20.00 (9)	18.88 (17)
<b>Practices to control ecto-parasites</b>				
7	Yes	88.88 (40)	84.44 (38)	86.6 (78)
	No	11.11 (5)	15.55 (7)	13.33 (12)
<b>Wash of hind quarters after expulsion of placenta</b>				
8	Yes	100 (45)	100 (45)	100 (90)
	No	0	0	
<b>Treatment of sick animal</b>				
9	By use of local empirical knowledge	11.11 (5)	13.33 (6)	12.22 (11)
	Livestock inspector	55.55 (25)	60 (27)	57.77 (52)
	Veterinary doctor-	33.33 (15)	26.66 (12)	30.00 (27)
<b>Treatment of sick animal</b>				
10	Reproductive	20.00 (9)	17.77 (8)	18.88 (17)
	Mastitis	15.55 (7)	13.33 (6)	14.44 (13)
	Metabolic	64.44 (29)	68.88 (31)	66.66 (60)

Percentages are mentioned without bracket (Frequencies are mentioned in bracket)

Data of Table 6 revealed that 90.00 per cent buffalo owners vaccinated their buffaloes while 10.00 per cent buffalo owners did not vaccinate their buffaloes. 50.00 per cent buffalo owners practiced to vaccinate against F.M.D disease followed by 40.00 per cent buffalo owners practiced against both F.M.D and H.S. (87.78 per cent) did not deworm their buffaloes 82.22 per cent respondents cleaned water trough and mangers daily followed by 15.56 per cent respondents cleaned water trough and mangers at alternative day. 83.33 per cent respondents' cleaned animal shed at weekly interval followed by 13.33 per cent respondents cleaned animal at alternative day and 4.44 per cent of farmers cleaned animal shed. 80.00 per cent buffalo owners isolated sick buffaloes from healthy ones while 20.00 per cent buffalo owners did not practice isolate sick buffaloes from healthy ones. 86.67 per cent respondents practiced to control ecto-parasites while 13.33 per cent respondents did not practice to control ecto-parasites. In Afzalpur and Aland 100 per cent respondents practiced to wash of hind quarters after drop of placenta. 57.78 per cent respondents treated their buffaloes by livestock inspector followed by 30.00 per cent respondents treated their buffalo by veterinary doctor followed by 12.22 per cent respondents treated their buffaloes by use of local empirical knowledge. (66.67%) reported that metabolic diseases occurred usually in their buffaloes followed by 18.89 per cent

respondents reported that reproductive diseases mostly occurred in their buffaloes followed by 14.44 per cent respondents reported that mastitis mostly occurred in their buffalo. Hence one can easily conclude from the data produced above for understanding the rearing practices adopted by the farmers.

**Acknowledgement**

Researchers are indebted to the Government of Karnataka and Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, India staff and farmers of Kalburgi for enabling the researcher to take up the experiment and for the financial assistance rendered.

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