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A Field Survey of Feeding and Breeding Practices at Peri Urban Buffalo Farms of Surat City of Gujarat

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ABSTRACT

A survey was conducted during April, 2014 to December, 2015 and data were collected from randomly selected 50 buffalo farm owners through personal interview with the help of pre-tested structured schedule from peri-urban areas of Surat city of Gujarat. The present study revealed that majority of respondents (86%) followed stall feeding system. The 82% respondents did not cultivated green fodder crops and 62 & 90% respondents fed green non-leguminous and shedha grass to their milking buffaloes, respectively. Majority of respondents fed homemade plus compound cattle feed as concentrate to their milking buffaloes, based on milk production, mainly during milking. The 62% respondents fed concentrate to their animals after soaking in water while, 38% respondents fed concentrates as such. Majority of respondents practiced to feed green/dry fodders as such to their buffaloes. Majority of respondents did not fed concentrates to their young calves while, 54% respondents fed concentrates to their heifers. Only 42% respondents provided mineral supplements to their buffaloes. All the respondents detected heat in their animals by observing the symptom of bellowing and mucus discharge (84%) and bred their buffaloes by artificial insemination (52%) between 12-18 hours after heat detection (84%). The 12% respondents bred their buffaloes after 2 to 3 months of calving and 64% respondents followed the pregnancy diagnosis but only 38% did it either from Livestock Inspectors or Artificial Insemination workers during three months of pregnancy. Majority of respondents followed treatment of anoestrous/repeaters in their buffaloes.

Keywords: Feeding, breeding, buffalo, practices, peri urban

India is the highest milk producer country in the world with an estimated quantity of 137.7 million tones in the year 2013-14 (Anonymous, 2015). Gujarat has around 5.23% of cattle and 9.55% of buffalo population of the country (Anonymous, 2014b). It contributed around 10.3 million tonnes (7.8%) of milk to the total milk pool of India and per capita milk availability was 476 g/ day during 2012-13 (Anonymous, 2014a). Gujarat is an important state in milk production and marketing in India on co-operative dairy system. Production potential of livestock depends mostly on the management practices under which they are reared and these practices vary significantly across various agro-ecological regions due to many factors. Understanding of livestock management practices followed by farmers in a region is necessary to identify the strengths and weaknesses of the rearing systems and to formulate suitable intervention policies (Gupta *et al*., 2008). Information is available on buffalo management practices in rural areas of different parts of India but it is meager on peri urban areas study. The aim of the present investigation was therefore; to ascertain the feeding and breeding management practices followed by buffalo farm owners under peri urban conditions.

MATERIALS AND METHODS

A field survey was conducted in peri urban areas of Surat city of Gujarat during April, 2014 to December, 2015 and data were collected from randomly selected 50 buffaloes farm owners who were keeping more than 10 buffaloes with its followers. While selecting respondents due care was taken to ensure that they were evenly distributed and truly represented buffalo management practices prevailing in the area. The selected buffalo farm owners were interviewed and the desired information was collected regarding feeding and breeding management practices for buffaloes with the help of pre-designed and pre-tested questionnaire. Data were tabulated and analyzed as per standard statistical tools to draw meaningful interference.

RESULTS AND DISCUSSION

Feeding management practices

The study regarding feeding practices followed by the buffalo farm owners are presented in Table 1 and revealed that majority of respondents (86%) followed stall feeding system, while only 14% of the respondents followed stall feeding as well as grazing system for their buffaloes. Similarly, Gupta *et al*. (2008) observed that nearly 85% farmers adopted stall feeding system in Rajasthan. However, Rangamma *et al*. (2013) reported that grazing of buffaloes was practiced by 72.45% of the respondents in Andhra Pradesh. These differences in adoption rate might be due to differences in rural and peri urban areas study in which more adoption rate of grazing practices in rural area was due to the availability of more grazing areas than in peri urban areas. Majority of the respondents (82%) didn't cultivated green fodder crops, while remaining 18% of the respondents cultivated green fodder crops. It may be due to the more numbers of respondents are landless in the study areas. These findings are in accordance with the findings of Rathore and Kachwaha (2009) who observed that 34.25 percent of the buffalo owners adopted cultivation of green fodder production practices in Jhunjhunu district of Rajasthan. These findings are in contrary to the findings of Rangamma *et al*. (2013) who observed that 82% of the respondents adopted green fodder production practices in Krishna district of Andhra Pradesh.

It was observed that majority of the respondents (62%) provided non-leguminous green fodder to their animals, while only 28% of the respondents provided non-leguminous + leguminous green fodder to their animals. However, 90% of the respondents provided non-cultivated green bunds grass and 96% of the respondents provided sugarcane tops. Not a single farmer practiced silage making because of shortage of green fodder and lack of knowledge about silage making. These results are contrary to the results of Chowdhry *et al*. (2006). It was further observed that 92% respondents fed their animals only paddy straw as dry fodder and rest fed paddy straw + jowar (10%). Similarly, Tiwari *et al*. (2009) also found that dry fodder mostly consists of wheat and paddy straw. Majority of farmers fed straw to their animals as by-product available from paddy (*Oriza sativa* L.) crop. The environmental conditions favour the cultivation of paddy crop than jowar (*Sorghum bicolor* L.) and maize (*Zea mays* L.). In addition to paddy straw and paddy straw with jowar 56% of the respondents provided the dry bund grasses to their animals as dry fodder. Present results are similar to the results of Sabapara *et al*. (2010) and Kumar *et al*. (2012).

Table 1: Distribution of respondents according to feeding practices followed

Particulars	Frequency	Percent
Feeding system		
Stall feeding	43	86
Stall feeding + Grazing	07	14
No. of times of feeding		
Twice	35	70
Thrice or more	15	30
Cultivation of green fodder		
Yes	09	18
No	41	82
Green fodder availability		
Non-legume	31	62
Legume	04	08
Non-legume + Legume	14	28
Not cultivating but feeding bunds grass	45	90
Sugarcane top	48	96
Dry fodder availability		
Paddy straw	46	92
Paddy straw + Jowar straw	05	10

Any other, Specify	28	56
Types of concentrate feeding		
Home made	01	02
Homemade + compounded cattle feed	33	66
Compounded cattle feed	16	32
Feeding criteria followed		
Milk production	45	90
Flat rate	05	10
Green and dry fodder fed		
As such	35	70
Chaffed	15	30
Time of feeding concentrate		
During milking	39	78
After milking	05	10
Before milking	06	12
Concentrate feeding to young calves		
Yes	18	36
No	32	64
Concentrate feeding to heifers		
Yes	27	54
No	23	46
Pretreatment of concentrate		
Dry	19	38
After soaking	31	62
Feeding of concentrate to advanced pregnant heifers		
No special feeding	08	16
For last 15 days	06	12
For last one month	04	08
For last two months	32	64
Special feeding after calving		
Yes	33	66
No	17	34
Feeding of mineral mixture		
Yes	21	42
No	29	58
Frequency of Watering		
2 times	02	04
3 times	38	76
free assess of water	10	20
Source of water		
Well	06	12
Bore	44	88

Table 1 revealed that majority (66%) of the respondents fed to their buffaloes home produced ingredients along with compound cattle feed followed by compound cattle feed (32%) and only home produced ingredients as concentrates (2%) as they felt that feeding of compound cattle feed increase milk production and also fat percentage of milk. Present results are in accordance to the results of Sabapara *et al*. (2010). However, the results are contrary to the findings of Manohar *et al*. (2014b) who reported that 45% of the respondents fed home prepared concentrate mixture to their buffaloes followed by readymade (41.87%) and mixture of home prepared and readymade (13.12%) in Jaipur district of Rajasthan.

The present study indicated that majority of the respondents (90%) fed concentrates to their buffaloes on the basis of their milk production, while, 10% of the respondents fed concentrates to their buffaloes on a flat rate basis. Almost similar findings have also been observed by Malik *et al.* (2005). However, Patil *et al*. (2014) reported that feeding of concentrate @ 50% of milk production of buffalo was adopted by 34.5% of farmers in Ramtek tahsil of Nagpur district. This practice of feeding concentrates has been communicated by co-operative dairy while supplying the compound cattle feed by putting one card of instructions regarding feeding. Hence, the extension method is very successful in the present study.

Majority of the respondents (70%) fed green/dry fodders as such, while 30% of the respondents offered chaffed green/dry fodders to their animals (Table 1). Majority of respondents were unaware about the importance of using chaffed dry and green fodders. It might be due to inadequate knowledge of efficient utilization of feed and fodders. These findings are in agreement with the results of Chowdhry *et al*. (2006). However, present findings are contrary to the results of Gupta *et al*. (2008) who reported that 79.3% farmers adopted chaffing of green and dry fodder practice. Chaffing of dry fodder was done by all the respondents as reported by Rathore and Kachwaha (2009). All the respondents fed concentrates two times in a day to their animals. It was observed that 78, 12 and 10% respondents practiced to feed concentrates during milking, before milking and after milking, respectively. These findings are supported by the finding of Rathore and Kachwaha (2009) who observed that 43% of the respondents fed concentrate mixture to lactating buffaloes before milking time

followed by 28.75% at milking time and 28.25% both at milking time and before milking time. However, Sheikh *et al.* (2011) reported that all the respondents offered concentrates twice daily at both morning and evening milking time to their animals.

It was observed that majority (64%) of the respondents did not feed concentrates to their young calves, while 36% of the respondents fed concentrates to their young calves. It was also observed that majority of the respondents (54%) fed concentrates to their heifers, while 46% of the respondents did not feed concentrates to their heifers. These findings are accordance to the findings of Sheikh *et al.* (2011). These findings are in contradiction with the results of Manohar *et al*. (2014b) who reported that majority (82.5%) of the buffalo keepers were feeding concentrate to young calves while only 13.75% of the buffalo keepers were feeding concentrate to heifers. The study revealed that majority (62%) of the respondents fed concentrates to their animals after soaking in water, while 38% of the respondents fed concentrate as such. Present findings are supported by Gupta *et al*. (2008).

Data presented in Table 1 revealed that majority of the respondents (84%) practiced to feed concentrates to their advanced pregnant heifers, while remaining 16% of the respondents didn't follow this practice. Present finding was well supported by the results of Manohar *et al*. (2014b). Further, it was found that 64% of the respondents practiced to feed concentrates to their advanced pregnant heifers during last 2 months of pregnancy followed by 8 and 12% of the respondents practiced to feed concentrates to their advanced pregnant heifers during last one month and last 15 days of pregnancy, respectively. This is a good practice adopted by respondents because maximum development of foetus occurs during last 6–7 weeks of pregnancy. The digestive system of high yielders become well acquainted to concentrate digestion which results in body weight gain and improvement of body condition of animals too. The results are supported by Chowdhry *et al.* (2006), Sabapara *et al*. (2010). However, Rangamma *et al*. (2013) reported very low i.e. 8% respondents provided concentrates to their advanced pregnant animals. The present findings are suggestive of successful communication by the technical agencies working in this area resulted in proper adoption by the farmers.

Data in Table 1 indicates that majority of the respondents (66%) followed special feeding after calving and only 34% respondents did not follow the practice of special feeding after calving to their buffaloes. Majority of the respondents had adequate knowledge about feeding care after calving. They fed energy and protein rich (Guar- *Cyamopsis tetragonoloba* L., Bajara- *Pennisetum glaucum* L., Wheat- *Triticum aresivum* L. or Paddy- *Oriza sativa* L., Coconut- *Cocos nucifera* etc.) feed mixed with echbolic ingredients, (Asaliya- *Barbarea verna*, Suva- *Anetheum sowa*, Methi- *Trigonellafoenum graecum* L. etc.) to prevent stress and to provide sufficient energy for freshening. These findings are in similar with the results of Sheikh *et al.* (2011).

It was observed that majority (58%) of the respondents did not provided mineral supplements to their buffaloes, while 42% respondents provide mineral supplements to their buffaloes. Mineral mixture supplementation is essential for producing buffaloes, however it was not yet more accepted in study area, this might be due to additional cost of mineral mixture incurred on feeding. Similar finding was reported by Aulakh *et al*. (2011). Present finding are encouraging than Tiwari *et al*. (2009) and Sheikh *et al.* (2011) reported that mineral mixture supplement to their milch animals was very low i.e. 14 and 6%, respectively. It might be due to very low level of awareness regarding feeding extra mineral mixture in their survey areas.

The study revealed that all of the respondents provided water to their buffaloes *ad libitum* in quantity but restricted in frequencies in which two times (4% respondents), three times (76% respondents) to free assess of water (20% respondents) a day were common in summer. About 70% respondents offered two times water in winter. Similarly, Chowdhry *et al.* (2006) and Sabapara *et al*. (2010) reported 72 and 98% of the respondents provided water three times a day, respectively. Thus the importance of water is known practically to all farmers, who provided water to their animals depending upon their resources. It was observed that majority of the respondents depended on Bore wells (88%) followed by well (12%) as a source of drinking water to their buffaloes. The present findings are comparable with the results of Malik *et al.* (2005) and Sabapara *et al*. (2010). Thus the resources seem to be common and available to same extent to the respondents of Uttar Pradesh and Gujarat.

Breeding management practices

The results regarding breeding practices followed by buffalo farm owners are presented in Table 2 and revealed that detection of heat in buffalo was done based on the symptoms of oestrus by all respondents. These findings are in similar line with the results of Manohar *et al*. (2014a). It was found that 84% respondents observed mucus discharge and bellowing as the symptoms of oestrus. Whereas, 12 and 4% respondents observed only mucus discharge and frequent urination as sole symptom of heat detection, respectively. The symptoms of estrus were mostly pronounced in morning or during cool hours of day. In winter buffaloes showed more intense heat symptoms as compared to summer. Present findings are comparable with the results of Chowdhry *et al.* (2006) and Gami *et al*. (2013).

Table 2: Distribution of respondents according to breeding practices followed

Particulars	Frequency	Percent
Methods of heat detection		
Symptoms	50	100
Teaser	00	000
Symptoms of heat detection		
Mucus discharge	06	12
Frequent urination	02	04
Mucus Discharge + Bellowing	42	84
Breeding of female animals		
Artificial insemination	26	52
Natural service	24	48
Breeding of female after heat detection		
Early heat	01	02
Mid heat	42	84
Late heat	07	14
Breeding after calving		
2-3 months	06	12
3-5 months	17	34
After 5 months	27	54
Pregnancy diagnosis		
No	18	36
Yes	32	64
(i) Own judgments	03	06
(ii) Qualified veterinarian	19	38
(iii) L.I. or A.I. worker	10	20
Treatment of anoestrous/repeaters		
Yes	41	82
No	09	18
Kept breeding records		
Yes	03	06
No	47	94

Table 2 indicates that 52% respondents used scientific method of artificial insemination (A.I.) for conceiving their buffaloes. While, 48% respondents used natural service for conceiving their buffaloes. Present results are encouraging than the results of Malik *et al*. (2005), Rathore and Kachwaha (2009), Gami *et al*. (2013) and Manohar *et al*. (2014a) for adoption of scientific method of artificial insemination in buffaloes breeding. It might be due to more awareness and easily availability of A.I. facility in present study areas than earlier study areas.

The study revealed that 84% respondents allowed their female buffalo for breeding through A.I. or N.S. at mid heat period and only 14 and 2% respondents allowed their animals at late and early heat period, respectively. This is a good practice adopted by respondents to serve their buffaloes in between 12–18 hrs from onset of estrus for better results of conception. This practice was widely accepted by respondents which might be due to extension work done by V.O. and A.I. workers in study areas. The results are in accordance with the results of Gupta *et al*. (2008). However, Manohar *et al*. (2014a) reported that 63.75, 36.25 & 0% of the respondents followed practice of insemination at early, mid & late stage of heat in buffaloes, respectively. It was also observed that 12, 34 and 54% respondents rebred their dairy animal after 2-3 months, 3-5 months and after 5 months of calving, respectively. These findings are supported with the results of Malik *et al.* (2005). It might be due to lack of knowledge regarding breeding after calving in study areas.

Data in Table 2 indicates that 64% of the respondents followed pregnancy diagnosis practice in their buffaloes, whereas 36% of the respondents did not follow pregnancy diagnosis practice. These findings are supported by the results of Gupta *et al.* (2008). However, Contrary to the present findings Rathore and Kachwaha (2009) reported only 37.2% of the respondents adopted pregnancy diagnosis practice in areas of Rajasthan. Among pregnancy diagnosis practice adopted, 20% pregnancy diagnosis were done by either livestock inspectors or A.I. workers

and 38% by qualified veterinarians during three months of pregnancy. However, 6% of the respondents had done pregnancy diagnosis by their own judgements. Present results of pregnancy diagnosis are more as compared to observed by Yadav *et al.* (2009) who reported that 15% cases of pregnancy diagnosis were done by veterinarians.

It was found that 82% of the respondents followed treatment of anoestrous/repeaters in their buffalo herds, whereas 18% of the respondents did not follow this practice. The present findings are lower than that reported by Rathore and Kachwaha (2009) and encouraging than results of Yadav *et al.* (2009). It was observed that only 6% of the respondents kept the breeding records of their dairy animals, whereas 94% of the respondents did not follow this practice.

CONCLUSION

It can be concluded that majority of respondents followed stall feeding system, fed green non-leguminous and shedha grass to their milking buffaloes. Paddy straw was major ingredient used as dry fodder. They fed homemade + compound cattle feed as concentrate to their milking buffaloes, based on milk production, mainly during milking time. Buffaloes were fed concentrate after soaking in water, green/dry fodders as such and no mineral supplements was given by farmers. Majority of respondents did not fed concentrates to young calves, however they fed concentrates to advanced pregnant heifers and followed special feeding after calving. All the respondents detected heat by observing the symptom of bellowing and mucus discharge and bred their buffaloes by A.I. between 12-18 hours after heat detection. Only few respondents bred their buffaloes after 2 to 3 months of calving, kept the breeding records and majority followed the pregnancy diagnosis after three months of breeding.

REFERENCES

Anonymous. 2014a. Basic Animal Husbandry & Fisheries Statistics, AHS Series-15, Ministry Of Agriculture Department Of Animal Husbandry, Dairying And Fisheries Krishi Bhawan, New Delhi.

Anonymous. 2014b. 19th livestock census-2012 all India report, Ministry of Agriculture Department of Animal Husbandry, Dairying and Fisheries, Government of India, Krishi Bhawan, New Delhi.

Anonymous. 2015. Annual Report 2014-15. Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India, Krishi Bhawan, New Delhi.

Aulakh, G.S., Yadav, J.S. and Singh, R. 2011. A study on adoption of recommended feeding practices by the buffalo owners of Punjab. *Indian J. Anim. Sci.*, **81**(6): 631–633.

Chowdhry, N.R., Patel, J.B. and Bhakat, M. 2006. An overview of feeding, breeding and housing practices of dairy animals under milk co-operative system in Banaskantha district of North Gujarat region. *Dairy Planner.*, **5**: 8-10.

Gami, B.M., Gami, Y.M. and Ahlawat, A.R. 2013. Study of breeding managerial practices for Mehsani buffalo in Banaskantha district of North Gujarat. *Vet. Sci. Res. J.*, **4**(1): 14-17.

Gupta, D.C., Suresh, A. and Mann, J.S. 2008. Management practices and productivity status of cattle and buffaloes in Rajasthan. *Indian J. Anim. Sci.*, **78**(7): 769-774.

Kumar, R., Nayak, S., Baghel, R.P.S., Khare, A., Dubey, M. and Pateriya, M. 2012. Existing feeding practices in rural areas of Mahakaushal region of Madhya Pradesh. *J. Anim. Res.*, **2**(1):105-110.

Malik, B.S., Meena, B.S. and Rao, S.V.N. 2005. Study of existing dairy farming practices in Uttar Pradesh. *J. Dairying, Foods & Home Sci.*, **24**(2): 91-95.

Manohar, D.S., Bais, B., Goswami, S.C., Jhirwal, A.K., Choudhary, D. 2014a. Study on breeding management practices of buffaloes in relationship with selected traits of respondents in Jaipur district of Rajasthan (India). *Indian J. Field Vet.*, **9**(3): 82-83.

Manohar, D.S., Goswami, S.C. and Bais B. 2014b. Study on feeding management practices of buffaloes in relationship with selected traits of respondents in Jaipur district of Rajasthan, India. *Indian J. Anim. Res.*, **48**(2): 150-154.

Patil, R.G., Atkare, V.G., Zinjarde, R.M. and Gubbawar, S.G. 2014. Feeding and management practices adopted by milch buffalo owners under field condition of Ramtek tahsil. *J. Soils Crops*, **24**(1): 154-158.

Rangamma, B., Jadeswararao, S., Prasad, R.M.V. and Ragavarao, E. 2013. Managemental practices adopted by buffalo milk producers in Krishna district of Andhra Pradesh. *Indian J. Anim. Prod. Mgmt.*, **29**(1-2): 61-68.

Rathore, R.S. and Kachwaha, R.N. 2009. Studies on existing management practices followed by the buffalo owners in Jhunjhunu district of Rajasthan. *Indian J. Anim. Prod. Mgmt.*, **25**(1-2): 8-11.

Sabapara, G.P., Desai, P.M., Kharadi, V.B., Saiyed, L.H. and Singh, R.R. 2010. Housing and feeding management practices of dairy animals in the tribal area of South Gujarat. *Indian J. Anim. Sci.*, **80**(10): 1022–1027.

Sheikh, A.S., Bhati, D.S. and Sheikh, W. 2011. Feeding practices followed by professional Kankrej cow owners of Banaskantha district of North Gujarat. *J. Pro. Agri.*, **2**(1): 67-69.

Tiwari, R., Sharma, M.C. and Singh, B.P. 2009. Animal feeding and management strategies in the commercial dairy farms. *Indian J. Anim. Sci.*, **79**(11): 1183-1184.

Yadav, C.M., Bhimawat, B.S. and Khan, P.M. 2009. Existing breeding and healthcare practices of cattle in tribals of Dungarpur district of Rajasthan. *Indian Res. J. Extn. Edu.*, **9**(1): 36-38.