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Adoption of improved dairy husbandry practices in tribal areas of Gujarat

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ABSTRACT

The present study was carried out in Valsad district of Gujarat to find the extent of adoption of improved dairy husbandry practices. A random sample of 240 dairy animal owners were selected and extent of adoption of improved dairy husbandry practices in six major aspects of housing, feeding, breeding, health care, milking and calf rearing management was studied. Proper orientation of animal shed (84.58%) and provision of proper floor space (85.63%) were more adopted in housing techniques. Provision of clean and fresh drinking water (87.08%), extra ration to advance pregnant animals (61.88%) and cultivation of green fodder (60.42%) were more adopted in feeding management. In breeding techniques, artificial insemination of animals (96.46%), keeping watch on oestrus cycle and heat symptoms of animals (84.58%) and breeding after 60-90 days of calving (79.38%) were more adopted by the dairy animal owners. Treatment of reproductive disorders (84.38%), proper cleaning and sanitation of shed (73.75%) and deworming of animals (57.92%) were more adopted by respondents in health care management techniques. In milking and calf rearing techniques, washing pails and hands before milking (98.96%), preparation of animals before milking (74.38%), attending newly born calf and proper cleaning of mucous from mouth and nostrils (98.75%), milk feeding to calf up to three months of age (96.88%) were more adopted by the dairy animal owners.

Key words: Adoption, Husbandry, Practices, Valsad District

Gujarat has 26.9 million total livestock population in which 9.6 million cattle and 10.5 million buffaloes. The contribution of Gujarat is about 14.49 million tons of milk to the total milk pool of India and per capita availability is 626 g/day[1]. Production performance of milch animals depends usually on the management practices under which they are reared and these practices differ from region to region due to many aspects. Thoughtful of dairy animals' management practices followed by farmers in a region is needed to work out the strengths and weaknesses of production systems and to formulate proper intervention policies[4]. The latest scientific adoption of dairy farming is based on the main pillars of balanced feeding, breeding, proper management and health control, which are the major elements to create ideal and expected conditions in animal husbandry. Various management practices are important to keep animal healthy, reduce calf mortality and improved the production performance of dairy animals. Therefore, the present study was undertaken with the objective to document extent of adoption of improved dairy husbandry practices in Valsad district of Gujarat.

MATERIALS AND METHODS

A field survey was conducted in Valsad district of South Gujarat during September, 2017 to January, 2018. Valsad district possess six talukas namely- Valsad, Dharampur, Vapi, Pardi, Umargaon and Kaparada. This district is spread over an area of 3008

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sq. km and has 434 villages. Out of six talukas in the district, two talukas were randomly selected. From each selected taluka 12 villages having functional primary milk producer's co-operative societies were selected at random. Ten dairy animal owners from each village were randomly selected with the help of Talati cum Mantri / village dairy cooperatives which constituted total of 240 respondents. The selected dairy farmers were interviewed with the help of structured interview schedule. A simple adoption scale was used in the present study[20]. The scale contained sixty practices, ten practices from each of the area of housing, feeding, breeding, health care, milking and calf rearing management. Against each of the practices, there were three columns representing 'continued adoption', 'occasionally adopted' and 'not adopted' with weightage of 2, 1 and 0, respectively. The recorded responses were counted and total score, mean score and mean percent score were calculated to draw meaningful inference.

RESULTS AND DISCUSSION

Adoption of housing management practices

Finding of present study (Table 1) indicated that out of ten practices included in adoption of housing management, provision of proper floor space got the highest adoption mean percent score (85.63) and occupied first rank. The second and third positions were occupied by proper orientation of animal shed (84.58) and proper height and ventilation (79.58), respectively. Provision of *pucca* paved floor in the shed (64.79), proper drainage and slope of floor (59.58), providing *pucca* manger (31.46), housing in separate located place (21.67), keeping animals in the shed at night and outside during day time in winter season and vice-a-versa in summer (14.17), providing bedding material on the floor during winter (7.50) and loose housing with seasonal modification (0.0) were awarded 4th, 5th, 6th, 7th, 8th, 9th and 10th rank, respectively. These present findings are in accordance with the earlier findings of author [5,6,7] who observed that majority (61 to 98%) of the respondents provided proper floor space to their dairy animals. Further, [6,7,18] also reported that majority (60 to 72 percent) of the houses of animals were in east-west direction. Similarly, [2,18] also reported that majority of the houses of animals had proper height and ventilation.

Table 1. Practice-wise extent of adoption of improved housing management

Sr. No.	Practices	Total adoption score	Mean score	Mean percent score	Rank order
1	Keeping animals in the shed at night and outside during day time in winter season and vice-a-versa in summer	68	0.28	14.17	VIII
2	Provision of proper floor space	411	1.71	85.63	I
3	Proper orientation of animal shed	406	1.69	84.58	II
4	Proper height and ventilation	382	1.59	79.58	III
5	Proper drainage and slope of floor	286	1.19	59.58	V
6	Provision of *pucca* manger	151	0.63	31.46	VI
7	Provision of bedding material on the floor during winter	36	0.15	7.50	IX
8	House in separate located place	104	0.43	21.67	VII
9	Provision of *pucca* paved floor in the shed	311	1.30	64.79	IV
10	Loose housing with seasonal modification	0	0.00	0.00	X

Adoption of feeding management practices

Adoption of feeding management practices are presented in Table 2 and revealed that provision of clean and fresh drinking water got the highest mean percent score (87.08) and occupied first rank. The second and third position were occupied by feeding extra ration to advance pregnant animals (61.88) and cultivation of green fodders (60.42). Feeding balance concentrate mixture on the basis of milk production (28.13), feeding mineral mixture (24.79), feeding green fodders to animal round the year (12.92), chaffing of dry fodders before feeding

(7.92) and feeding of common salt (7.29) occupied the rank of 4th, 5th, 6th, 7th and 8th, respectively. Urea treatment for improving the poor quality paddy straw (0.00) and preservation of surplus green fodders as hay and silage (0.00) jointly obtained last rank as not a single respondent has adopted this practices. Adoption of feeding of extra ration to advance pregnant animals were similar to the results reported by earlier researcher [9,14,15]. The present results of feeding balance concentrates mixture on the basis of milk production are lower than the earlier results reported by [3,15,19]. Adoption of practice to cultivation of green fodder was similar to the earlier results reported by [13].

Table 2. Practice-wise extent of adoption of improved feeding management

Sr. No.	Practices	Total adoption score	Mean score	Mean percent score	Rank order
1	Chaffing of dry fodders before feeding	38	0.16	7.92	VII
2	Feeding extra ration to advance pregnant animals	297	1.24	61.88	II
3	Provision of clean and fresh drinking water	418	1.74	87.08	I
4	Feeding balance concentrate mixture on the basis of milk production	135	0.56	28.13	IV
5	Feeding of common salt	35	0.15	7.29	VIII
6	Urea treatment for improving the poor quality paddy straw	0	0.00	0.00	IX
7	Feeding mineral mixture	119	0.50	24.79	V
8	Cultivation of green fodders	290	1.21	60.42	III
9	Feeding green fodders to animal round the year	62	0.26	12.92	VI
10	Preservation of surplus green fodder as hay and silage	0	0.00	0.00	IX

Adoption of breeding management practices

Data in Table 3 indicated that out of ten practices included in adoption of breeding management, artificial insemination of animals got the highest mean percent score (96.46) and occupied first rank. The second and third positions were occupied by keeping watch on oestrus cycle and heat symptoms of animals (84.58) and breeding after 60-90 day of calving (79.38), respectively. Service/insemination after 12-16 hours since onset of heat (78.33), treatment of anoestrus/repeat breeder (68.75), practicing pregnancy diagnosis between 60-90 days after service (66.25), considering age and weight of heifers at first breeding (58.54), keeping record of service, calving and heat detection (40.00) occupied the rank 4th, 5th, 6th, 7th and 8th, respectively. Adequate exercise to pregnant animal (4.17) and natural service with bulls of superior breed (3.96) occupied the rank of 9th and 10th, respectively. The high adoption of artificial insemination of animals, keeping watch on oestrus cycle and heat symptoms of animals, service / insemination after 12-16 hours since onset of heat and practicing pregnancy diagnosis between 60-90 days after service by the respondents might be due to the fact that the respondents had more awareness about these practices as they are directly affecting the economy of farmers which is similar with the earlier findings of author[13].

Table 3. Practice-wise extent of adoption of improved breeding management

Sr. No.	Practices	Total adoption score	Mean score	Mean percent score	Rank order
1	Keeping record of service, calving and heat detection	192	0.80	40.00	VIII
2	Keeping watch on oestrus cycle and heat symptoms of animals	406	1.69	84.58	II
3	Treatment of anoestrus/repeat breeder	330	1.38	68.75	V
4	Natural service with bulls of superior breed	19	0.08	3.96	X

5	Service/insemination after 12-16 hours since onset of heat	376	1.57	78.33	IV
6	Considering age and weight of heifers at first breeding	281	1.17	58.54	VII
7	Breeding after 60-90 day of calving	381	1.59	79.38	III
8	Adequate exercise to pregnant animal	20	0.08	4.17	IX
9	Artificial insemination of animals	463	1.93	96.46	I
10	Practicing pregnancy diagnosis between 60-90 days after service	318	1.33	66.25	VI

Adoption of health care management practices

Adoptions of health care practices are presented in Table 4 revealed that out of ten practices, treatment of reproductive disorder got the highest mean percent score (84.38) and awarded first rank. The second and third positions were occupied by proper cleaning and sanitation of shed (73.75) and deworming of animals (57.92), respectively. Timely and regularly vaccination (56.67), observing animals daily for signs of sickness (54.58), proper method of disposing of carcass of dead animals (42.50), proper treatment of sick animals by veterinarians (31.88), lice and tick eradication (24.58) and prompt reporting of outbreak of contagious diseases to local veterinarians (6.67) were awarded 4th, 5th, 6th, 7th, 8th, and 9th ranks, respectively. While, the last rank was awarded to isolation of sick animals from healthy ones (0.21). Adoption of proper cleaning and sanitation of shed and proper treatment of sick animals by veterinarians were higher than that of earlier results reported by [8,11,16].

Table 4. Practice-wise extent of adoption of improved health care management

Sr. No.	Practices	Total adoption score	Mean score	Mean percent score	Rank order
1	Proper cleaning and sanitation of shed	354	1.48	73.75	II
2	Lice and tick eradication	118	0.49	24.58	VIII
3	Isolation of sick animal from healthy ones	1	0.00	0.21	X
4	Observing animals daily for signs of sickness	262	1.09	54.58	V
5	Treatment of reproductive disorder	405	1.69	84.38	I
6	Proper treatment of sick animals by veterinarians	153	0.64	31.88	VII
7	Prompt reporting of outbreak of a contagious diseases to local veterinarians	32	0.13	6.67	IX
8	Timely and regularly vaccination	272	1.13	56.67	IV
9	Proper method of disposing of carcass of dead animals	204	0.85	42.50	VI
10	Deworming of animals	278	1.16	57.92	III

Adoption of milking management practices

Data presented in Table 5 indicated that out of ten practices included in adoption of milking management practices, washing of pails and hands before milking had obtained the highest mean percent score (98.96) which revealed that the respondents adopted these practices to the great extent, hence this was ranked first. Similarly, preparation of animal before milking (74.38), practices of milking politely, gently, quickly and quietly (63.54), regularity in milking time (62.92), keeping milk record (36.46), complete milking followed by stripping (19.58), dry hand milking (7.71), full hand milking method (6.25) and proper drying of animal and sealing of teat canal by infusion of intra-mammary ointment (0.83) occupied 2nd, 3rd,4th, 5th, 6th, 7th, 8th and 9th positions, respectively. While the last rank was awarded to milking in clean and separate place (0.00). Adoption of full hand milking method and milking in clean and separate place were similar to the results reported by earlier author[16] in their study areas of Surat district

of Gujarat. Adoption of dry hand milking was lower than that of earlier results reported by [10].

Table 5. Practice-wise extent of adoption of improved milking management

Sr. No.	Practices	Total adoption score	Mean score	Mean percent score	Rank order
1	Practices of milking politely, gently, quickly and quietly	305	1.27	63.54	III
2	Preparation of animal before milking	357	1.49	74.38	II
3	Complete milking followed by stripping	94	0.39	19.58	VI
4	Regularity in milking time	302	1.26	62.92	IV
5	Milking in clean and separate place	0	0.00	0.00	X
6	Keeping milk record	175	0.73	36.46	V
7	Full hand milking method	30	0.13	6.25	VIII
8	Dry hand milking	37	0.15	7.71	VII
9	Proper drying of animal and sealing of teat canal by infusion of intra-mammary ointment	4	0.02	0.83	IX
10	Washing pail and hands before milking	475	1.98	98.96	I

Adoption of calf rearing management practices

Adoption of calf rearing practices (Table 6) revealed that out of ten practices, attending newly born calf and proper cleaning of mucous from mouth and nostrils got the highest adoption of mean percent score (98.75) and occupied first rank. The second and third positions were occupied by milk feeding to calves up to three months of age (96.88) and early solid feeding (78.96), respectively. Right time and method of dehorning (78.13), feeding of colostrum to newly born calves within one hour after birth (70.00), regular deworming of calves (59.38), trimming of hooves (42.71), ligating and disinfection of naval cord (7.71), right time and method of castration (5.42), providing bedding material on floor in winter season (2.50) were awarded 4th, 5th, 6th, 7th, 8th, 9th and last ranks, respectively. Present results were similar with earlier results of author [17] in their study areas of Surat district of Gujarat. However, present result of feeding of colostrum to newly born calves within one hour after birth and regular deworming of calves were encouraging than the earlier finding of author [12].

Table 6. Practice-wise extent of adoption of improved calf rearing management

Sr. No.	Practices	Total adoption score	Mean score	Mean percent score	Rank order
1	Milk feeding to calf up to three months of age	465	1.94	96.88	II
2	Attending newly born calf and proper cleaning of mucous from mouth and nostrils	474	1.98	98.75	I
3	Trimming of hooves	205	0.85	42.71	VII
4	Feeding of colostrum to newly born calf within one hour after birth	336	1.40	70.00	V
5	Ligating and disinfection of naval cord	37	0.15	7.71	VIII
6	Providing bedding material on floor in winter season	12	0.05	2.50	X
7	Right time and method of castration	26	0.11	5.42	IX
8	Right time and method of dehorning	375	1.56	78.13	IV
9	Regular deworming of calf	285	1.19	59.38	VI

10	Early solid feeding	379	1.58	78.96	III

CONCLUSIONS

It can be concluded that provision of bedding material on the floor during winter, provision of *pucca* manger and animal shed in separate located place were least adopted by the dairy animal owners. Very few respondents adopted the chaffing of dry fodders before feeding, feeding of common salt and feeding green fodders to animal round the year. Adequate exercise to pregnant animal, isolation of sick animal from healthy ones, proper treatment of sick animals by veterinarians were least adopted technique in breeding and health care management. None of the respondents adopted milking in clean and separate place and very few respondents adopted full hand milking method, dry hand milking and proper drying of animal and sealing of teat canal by infusion of intra-mammary ointment. In calf rearing techniques very few respondents adopted ligating and disinfection of naval cord and providing bedding material on floor in winter season.

REFERENCES

1. Anonymous. 2020. 36th Survey report on estimates of major livestock products for the year 2018-2019 Gujarat state, Directorate of animal husbandry, Krishibhavan, Sector-10/A, Gandhinagar.
2. Bainwad, D. V.; Deshmukh, B. R.; Thombre, B. M. and Chauhan, D. S. 2007. Feeding and management practices adopted by buffalo farmers under watershed area. *Indian J. Anim. Res*., **41**(1): 68-70.
3. Divekar, B. S.; Trivedi, M. M. and Dhami, A. J. 2016. Adoption of improved animal husbandry practices by dairy farmers of Kheda district in Gujarat, International *J. Sci. Envir. Tech., **5***(6): 4268-78.
4. 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.
5. Kishore, K., Mahender, M. and Harikrishna, Ch. 2013. A study on buffalo management practices in Khammam district of Andhra Pradesh. *Buffalo Bulletin*, **32**(2): 97-119.
6. Kumar, S. and Mishra, B. K. 2011. Existing feeding and housing management practices followed by dairy producers in Tehri Garhwal district of Uttarakhand. *Indian J. Anim. Prod. Mgmt*., **27**(3-4): 159-162.
7. Patel, P. C.; Sabapara, G. P. and Sorathiya, L. M. 2018. Housing management practices followed by dairy animal owners in Valsad district of Gujarat. *Indian J. Anim. Prod. Mgmt*., ***34** (3-4): 7-13.*
8. Patel, P. C.; Sabapara, G. P. and Sorathiya, L. M. 2019. Health care management practices followed by dairy animal owners in tribal areas of Gujarat. *Indian J. Anim. Prod. Mgmt*., **35**(1-2): *54-58.*
9. 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.
10. Sabapara, G. P. 2016. Breeding and milking management practices of dairy animals in coastal areas of Gujarat. *Indian J. Anim. Prod. Mgmt*., **32**(3-4):185-190.
11. Sabapara, G. P. 2017. Housing and health care management practices of dairy animals followed by farmers in coastal areas of South Gujarat. *Indian J. Anim. Prod. Mgmt*., **33**(1-2):1-6.
12. Sabapara, G. P. 2018. Buffalo calf rearing practices followed at peri-urban buffalo farms of Surat city, Gujarat. *Indian J. Anim. Prod. Mgmt*., **34**(1-2):27-30.
13. Sabapara, G. P. and Fulsoundar, A. B. 2016. Existing feeding and breeding management practices for dairy animals in Surat district of Gujarat. *Indian J. Anim. Prod. Mgmt*., **32**(1-2):1-7.
14. 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.

15. Sabapara, G. P.; Fulsoundar, A. B. and Kharadi, V. B. 2014. Extent of adoption of improved dairy husbandry techniques in Surat district of Gujarat. *Indian J. Anim. Prod. Mgmt*., **30**(3-4): 9-15.
16. Sabapara, G. P.; Fulsoundar, A. B. and Kharadi, V. B. 2015. Milking and health care management practices followed by dairy animal owners in rural areas of Surat district. *Scholars J. Agri. Vet. Sci.*, **2**(2A):112-117.
17. Sabapara, G. P.; Fulsoundar, A. B. and Kharadi, V. B. 2015[a]. Survey of calf rearing practices followed at rural dairy farms in Surat District. *J. Anim. Res.,* **5** (2): 257-261.
18. Sabapara, G. P.; Fulsoundar, A. B. and Kharadi, V. B. 2015[b]. Existing housing management practices followed by rural dairy animal owners in Surat district of Gujarat. *International J. Farm Sci*., **5**(4): 299-308.
19. Sabapara, G. P.; Padheriya, Y. D. and Kharadi, V. B. 2016. A field survey of feeding and breeding practices at peri-urban buffalo farms of Surat city of Gujarat. *J. Anim. Res*., **6**(5): 933-939.
20. Sharma, R. K. and Sohil, T. S. 1987. A scale for measuring adoption of dairy innovations. *Indian J. Ext. Edu.*, **23**(1): 68-71.