

## ADOPTION LEVEL OF SCIENTIFIC DAIRY MANAGEMENT PRACTICES AMONG LIVESTOCK OWNERS

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### ABSTRACT

*The present field survey was carried out to investigate adoption level of various aspects of feeding, housing, milking, health care and breeding management practices followed by livestock owners of Amreli district of Gujarat. Data regarding these management practices were collected and studied through pre-design questionnaire from 300 livestock owners. Study revealed that livestock owners had high adoption level in special feeding (calving mixture) after calving (2.80 mean score), supply of dry fodder (2.80 mean score), practices of stall feeding (2.72 mean score), well ventilated house (2.82 mean score), provision of water through pucca watering trough (2.79 mean score), provision of pucca manger (2.75 mean score), distant location of manure pit (2.71 mean score), kind behaviour and grooming practice with milking animal (2.85 mean score), allow calf for let-down of milk (2.83 mean score), calm environment of milking place (2.80 mean score) and cleaning of milk utensil with detergent washing and sun drying (2.71 mean score). However, low level of adoption was observed in chaffing of fodder (1.66 mean score), feeding mineral mixture (1.34 mean score), feeding salt (1.28 mean score), provision of R.C.C. roof (1.62 mean score), pucca floor (1.59 mean score), cleaning udder and teats before milking with antiseptic (1.99 mean score), washing/bathing of animal before milking (1.83 mean score) and cleaning and dipping of udder and teats just after milking (1.32 mean score). Further, adoption level was found high in ectoparasites control practices (2.89 mean score), colostrum offered to new born calf within an hour (2.42 mean score), vaccination of animal (2.30 mean score), insemination/mating of animal after heat detection within 12 to 18 hours (2.77 mean score), waiting for placental expulsion up to 12 hours (2.75 mean score) and pregnancy diagnosis after 3 month of breeding (2.58 mean score). Whereas, livestock owner had low level of adoption in disinfection of animal shed (1.99 mean score), navel disinfection of calf (1.72 mean score), isolation of sick animals (1.41 mean score), breeding of animals thorough A.I. (1.72 mean score), proven bull for natural service (1.62 mean score) and initiation of breeding of heifers on the basis of body weight/size (1.28 mean score) among the different practices of healthcare and breeding management.*

**Keywords:** feeding, housing, milking, healthcare, breeding, adoption

### INTRODUCTION

India is a largest milk producer country in the world; having 860.1 MMT milk production. Vocation of milk production and their value addition is key source of livelihood and also plays vital role in Indian economy. About 20.5 million people depend upon livestock for their livelihood. Livestock contributed 16% to the income of small farm households as against an average of 14% for all rural households. Livestock provides livelihood to two-third of rural community. It also provides employment to about 8.8 % of the population in India. India has vast livestock resources. Livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP (DAHD, 2020-21).

Livestock farm production can be influenced by the level and speed of adoption of dairy innovation by farming

community has been far from satisfactory. Adoption of improved scientific dairy practices has slow pace which is subjective to various factors. Various studies indicates that farmers have adopted only 30 per cent of the scientific dairy practices, even though serious efforts to transfer the scientific dairy husbandry practices to the farmers have been made by the state animal husbandry departments, KVKs, milk co-operative dairies (Meena, 2012).

As adoption of scientific dairy husbandry practices is one of the important aspects (Bhabhor *et al.*, 2020), which influence livestock production, present study was undertaken to collect information regarding adoption level of feeding, housing, milking, healthcare and breeding management practices by livestock owners in Amreli district to provide help in adoption of scientific management practices for better production.

**OBJECTIVE**

To analyse the adoption level of scientific dairy management practices among livestock owners

**METHODOLOGY**

The present study was conducted in Amreli district of Gujarat. Five talukas purposively selected on the basis of livestock population. Three villages from each talukas selected randomly and 20 farmers from each village made a

total sample size of 300. Ex-post facto research design was used for the study. Data collected from farmer with help of pre tested interview schedule. General profile of farmers and desired information for different management practices was collected from dairy farmers.

Feeding, housing, milking, healthcare and breeding management practices followed by dairy farmers were surveyed in three villages of each of following talukas of Amreli district.

Sr. No.	Name of taluka	Name of Village	No. of dairy farmers
1	Kukavav	Najapur, Nava Ujda, Jangar	20 per village
2	Khambha	Khadadhar, Raydi, Ingorala	20 per village
3	Lathi	Bhurakhiya, Toda, Asodar	20 per village
4	Babra	Bhiladi, Charkha, Vandaliya	20 per village
5	Amreli	Chital, Vankiya, Chakkargadh,	20 per village
<b>Total</b>	<b>5 Nos.</b>	<b>15 Nos.</b>	<b>300 Nos.</b>

The scientific practices adopted for management of dairy animal was used as a base for extent of adoption. The information regarding the level of adoption of each of selected practices and potentiality of its adoption was collected through personal interview method. Scoring of 3, 2 and 1 was given to the practices fully adopted, partially adopted and not adopted, respectively. Firstly, the total adoption score of a particular item was calculated considering the responses expressed by all the respondents. Secondly, the mean score of a particular item was worked out by dividing the total score of their particular item with the total number of respondents. Finally, based on the mean score, the rank order to followed scientific practice in a particular animal husbandry practices were found out.

The overall adoption score for each respondent was then calculated by adding up all the scores obtained under each sub areas. The respondents were grouped into three levels of adoption by using mean and standard deviation.

Sr. No.	Category	Range
1	Low level of adoption	$\leq \bar{x} - S.D.$
2	Medium level of adoption	In between $\bar{x} \pm S.D.$
3	High level of adoption	$\geq \bar{x} + S.D.$

**RESULTS AND DISCUSSION****Adoption level of livestock farmers regarding different scientific dairy husbandry practices**

Information on adoption level of dairy farmers

regarding different scientific dairy husbandry practices like feeding, milking, housing, healthcare and breeding.

**Feeding management**

In respect of feeding management, respondents adopted special feeding (calving mixture) after calving and supply of dry fodder with 2.80 mean score and ranked I followed by practices of stall feeding (2.72 mean score), feeding of extra conc. to advanced pregnant animal (2.66 mean score), supply of green fodder (2.58 mean score), use of pelleted concentrates mixture (2.56 mean score), Feeding colostrums to new born calf before expulsion of placenta (2.44 mean score), free access of drinking water (2.37 mean score), feeding based on production (2.29 mean score), individual feeding of milch animals (1.85 mean score), supply of mixed (Legume + Cereal) fodder (1.78 mean score), chaffing of fodder (1.66 mean score), feeding mineral mixture (1.34 mean score) and feeding salt (1.28 mean score) ranked II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, and XIII, respectively. Contradictory results reported in terms of chaffing of green fodder, feeding of mineral mixture, feeding of advance pregnant bovine with extra concentrates, while parallel findings reported for colostrum feeding to newborn calf in Haryana by Singh, (2018).

**Table 1: Distribution of respondents according to their level of adoption regarding feeding management**

(n=300)

Sr. No.	Adoption practice	FA	PA	NA	Total score	Mean score	Rank
1	Practices of stall feeding	251	14	35	816	2.72	II
2	Individual feeding of milch animals	116	24	160	556	1.85	IX
3	Supply of green fodder	188	98	14	774	2.58	IV
4	Supply of mixed (Legume + Cereal) fodder	61	113	126	535	1.78	X
5	Supply of dry (Lucerne /Jowar hay /Gotar) fodder	239	61	0	839	2.80	I
6	Use of pelleted concentrates mixture	187	94	19	768	2.56	V
7	Feeding based on Production	178	31	91	687	2.29	VIII
8	Chaffing of fodder	83	33	184	499	1.66	XI
9	Feeding of extra conc. to advanced preg. Animal	247	3	50	797	2.66	III
10	Feeding salt	24	37	239	385	1.28	XIII
11	Feeding mineral mixture	32	38	230	402	1.34	XII
12	Special feeding (calving mixture) after calving	263	15	22	841	2.80	I
13	Free access of drinking water	191	30	79	712	2.37	VII
14	Feeding colostrum to new born calf before expulsion of placenta	177	79	44	733	2.44	VI

**Housing management****Table-2: Distribution of respondents according to their level of adoption regarding housing management**

(n=300)

Sr. No.	Adoption practice	FA	PA	NA	Total score	Mean score	Rank
1	East-west long axis of house	101	106	93	608	2.03	XIII
2	Pucca floor	83	12	205	478	1.59	XVI
3	Levelled floor	227	50	23	804	2.68	VII
4	Slope of floor toward back	160	111	29	731	2.44	IX
5	Provision of R.C.C. roof	59	69	172	487	1.62	XV
6	Surrounding wall	90	195	15	675	2.25	XI
7	Pucca wall	234	37	29	805	2.683	VI
8	Provision of pucca manger	248	30	22	826	2.75	III
9	Provision of water through pucca watering trough	252	33	15	837	2.79	II
10	Provision of urine drain/gutter	141	145	14	727	2.42	X
11	Cleanliness of house	223	62	15	808	2.69	V
12	Provision and practice to protect animal from extreme weather: bedding/curtain	222	52	26	796	2.65	VIII
13	Well ventilated house	255	36	9	846	2.82	I
14	Use of disinfectant in house	97	94	109	588	1.96	XIV
15	Distant location of manure pit	219	74	7	812	2.71	IV
16	Separate feed and fodder storage room (Concentrate/roughage)	141	85	74	667	2.22	XII

With regards to housing management, respondents adopted well ventilated house with 2.82 mean score and ranked I followed by provision of water through pucca watering trough (2.79 mean score), provision of pucca manger (2.75 mean score), distant location of manure pit (2.71 mean score), cleanliness of house (2.69 mean score), pucca wall (2.683 mean score), levelled floor (2.680 mean score), provision and practice to protect animal from extreme weather (bedding/curtain) (2.65 mean score), slope of floor toward back (2.44 mean score), provision of urine drain/gutter (2.42 mean score), Surrounding wall (2.25 mean score), separate feed and fodder storage room (Concentrate/ roughage) (2.22

mean score), east-west long axis of house (2.03 mean score), use of disinfectant in house (1.96 mean score), provision of R.C.C. roof (1.62 mean score) and pucca floor (1.59 mean score) ranked II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV and XVI, respectively. Conflicting results for pucca floor, provision of pucca roof and similar findings in terms of levelled floor, provision and practice to protect an animal from extreme weather were observed at costal area of south Gujarat by Singh, (2017) and Meena, (2017) reported results in line with finding of cleanliness of animal house.

### Milking management

**Table-3: Distribution of respondents according to their level of adoption regarding milking management (n=300)**

Sr. No.	Adoption practice	FA	PA	NA	Total score	Mean score	Rank
1	Milking at separate place and dry place	127	171	2	725	2.42	VII
2	Calm environment of milking place	250	41	9	841	2.80	III
3	Kind behaviour and grooming practice with milking animal	264	27	9	855	2.85	I
4	Full hand milking	77	223	0	677	2.26	XI
5	Stripping at the end of milking	228	30	42	786	2.62	V
6	Wet hand milking with water	148	94	58	690	2.30	X
7	Cleaning udder and teats before milking with antiseptic	15	267	18	597	1.99	XIV
8	Washing/Bathing of animal before milking	105	38	157	548	1.83	XV
9	Washing hand with antiseptic before milking	29	247	24	605	2.02	XII
10	Never change of milker	155	93	52	703	2.34	IX
11	Clean narrow mouthed milking pail	144	155	1	743	2.48	VI
12	Allow calf for let-down of milk	249	51	0	849	2.83	II
13	Cleaning of milk utensil with detergent washing and sun drying	235	44	21	814	2.71	VI
14	Cleaning and Dipping of teats just after milking	39	18	243	396	1.32	XVI
15	Completion of milking within 5 min. per animal	61	178	61	600	2.00	XIII
16	Intermittent method of drying an animal	168	86	46	722	2.41	VIII

Among milking management practices, with 2.85 mean score respondents adopted kind behaviour and grooming practice with milking animal and ranked I followed by practice of allow calf for let-down of milk (2.83 mean score), calm environment of milking place (2.80 mean score), cleaning of milk utensil with detergent washing and sun drying (2.71 mean score), stripping at the end of milking (2.62 mean score), clean narrow mouthed milking pail (2.48 mean score), milking at separate place and dry place (2.42 mean score), intermittent method of drying an animal (2.41 mean score), never change of milker (2.34 mean score), wet hand milking with water (2.30 mean score), full hand milking (2.26 mean score), washing hand with antiseptic before milking (2.02 mean score), completion of milking within 5 minute per animal (2.00 mean score), cleaning udder

and teats before milking with antiseptic (1.99 mean score), washing/bathing of animal before milking (1.83 mean score) and cleaning and dipping of udder and teats just after milking (1.32 mean score) ranked II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, and XVI, respectively. In terms of method of milking, cleaning of udder and hands before milking altered and similar findings for cleaning of milk utensil was observed by Akhter (2017).

### Healthcare management

As regards to healthcare management, respondents adopted ecto-parasites control practices with 2.89 mean score and ranked I followed by colostrum offered to new born calf within an hour (2.42 mean score), vaccination of animal (2.30 mean score), treatment of sick animal by veterinary doctor (2.13 mean score), deworming of calves (2.09 mean score),

grooming of animals (2.03 mean score), disinfection of animal shed (1.99 mean score), navel disinfection of calf (1.72 mean score) and isolation of sick animals (1.41 mean score) ranked II, III, IV, V, VI, VII, VIII and IX, respectively (table 4). Contradictory findings for tick control and vaccination

of animals and similar results for isolation of sick animal were reported by Meena, (2017). Whereas contradictory findings for proper vaccination of animals and control of external parasite were observed by Akhter, (2013).

**Table 4: Distribution of respondents according to their level of adoption regarding healthcare management**

(n= 300)

Sr. No.	Adoption practice	FA	PA	NA	Total score	Mean score	Rank
1	Isolation of sick animals	30	64	206	424	1.41	IX
2	Treatment of sick animal by veterinary doctor	81	177	42	639	2.13	IV
3	Vaccination of animal	155	81	64	691	2.30	III
4	Deworming of calves	129	70	101	628	2.09	IV
5	Navel disinfection of calf	104	8	188	516	1.72	VIII
6	Disinfection of animal shed	97	98	109	596	1.99	VII
7	Practices to control Ecto-parasites	180	107	113	867	2.89	I
8	Grooming of animals	126	57	117	609	2.03	VI
9	Colostrum offered to new born calf within an hour	174	78	48	726	2.42	II

**Breeding management**

**Table 5: Distribution of respondents according to their level of adoption regarding breeding management**

(n= 300)

Sr. No.	Adoption practice	FA	PA	NA	Total score	Mean score	Rank
1	Emphasis given to male for improvement of breed/productivity	142	103	55	687	2.29	VI
2	Symptoms to detect sexual-heat (vaginal discharge + other symptoms)	76	113	111	565	1.88	XI
3	Breeding of animals thorough A.I.	69	78	153	516	1.72	XII
4	Proven bull for natural service	42	101	157	485	1.62	XIII
5	Initiation of breeding of heifers on the basis of body weight/size	42	101	57	385	1.28	XIV
6	Breeding after 2 to 3 months of calving	132	93	77	659	2.20	VIII
7	Insemination/mating of animal after heat detection within 12 to 18 hours	233	66	1	832	2.77	I
8	Artificial insemination by veterinary doctor	52	168	80	572	1.91	X
9	Breeding records	200	46	54	746	2.49	IV
10	Waiting for placental expulsion up to 12 hours	253	20	27	826	2.75	II
11	Pregnancy diagnosis by veterinary doctor	72	182	46	626	2.09	IV
12	Pregnancy diagnosis after 3 month of breeding	204	67	29	775	2.58	III
13	Calving interval in cows (< 14 months)	140	136	24	716	2.39	V
14	Calving interval in Buffaloes (< 15 months)	117	130	53	664	2.21	VII

In case of breeding management respondents adopted insemination/mating of animal after heat detection within 12 to 18 hours with 2.77 mean score and ranked I followed by waiting for placental expulsion up to 12 hours (2.75 mean score), pregnancy diagnosis after 3 month of breeding (2.58 mean score), breeding records (2.49 mean score), Calving interval in cows (< 14 months) (2.39 mean score), emphasis given to male for improvement of breed/productivity (2.29 mean score), Calving interval in Buffaloes (< 15 months) (2.21 mean score), breeding after 2 to 3 months of calving (2.20 mean score), Pregnancy diagnosis by veterinary doctor (2.09 mean score), Artificial insemination by veterinary doctor (1.91 mean score), Symptoms to detect sexual-heat

(vaginal discharge + other symptoms) (1.88 mean score), breeding of animals thorough A.I. (1.72 mean score), proven bull for natural service (1.62 mean score) and initiation of breeding of heifers on the basis of body weight/size (1.28 mean score) ranked II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII and XIV, respectively. Similar findings in case of breeding through artificial insemination, use of improved bull for breeding, insemination of cow after 12 to 18 hours of heat and opposing reports for pregnancy diagnosis after breeding were reported by Meena, (2017). Comparable observations were reported for symptoms of heat detection, breeding of female through AI, pregnancy diagnosis, calving interval of indigenous cow and buffalo and insemination or mating of female after 12 to 18 hours of heat detection by Prajapati, (2015).

**Overall level of adoption regarding different scientific dairy management****Table-6 Distribution of respondents according to overall level of adoption regarding different scientific dairy management (n=300)**

Sr. No.	Adoption level	Frequency	Percent
1	Low level of Adoption (score value Up to 148)	53	17.67
2	Medium level of Adoption (score value 148 to 165)	206	68.66
3.	High level of Adoption (More than 165)	41	13.67
Mean=156			SD=8.85

The information supplied in table-6 showed that majority of the respondents (68.66 per cent) had medium level of adoption regarding overall scientific dairy management whereas, 17.67 per cent and 13.67 per cent of them had low level and high level of adoption, respectively. The probable reason might be due to poor resources and small land holding by dairy farmers. Key role of dairy women is neglected in operation area. Moreover, less availability of veterinary facility and absence of dairy management extension activities nearby their area.

**CONCLUSION**

It may be concluded from the study that adoption level of scientific dairy husbandry practices such as feeding, housing, milking, healthcare and breeding management was quite low and unsatisfactory for development in dairy sector. This could be considered as the great opportunity and wide scope for scientist to know reasons behind adoption as well as for extension workers to disseminate scientific dairy practices to livestock owner of Amreli District. Therefore, scientists, KVK, Veterinary officers, Dairy Development officers must periodically conduct training and awareness programmes with respect to different scientific dairy husbandry practices to boost up level of adoption of livestock owners in the scientific dairy husbandry practices.

**POLICY IMPLICATION**

Based on the findings of the study it can be recommended that area need a specific programme to improve scientific dairy management practice. Dairy cooperatives and KVKs should conducted village level demonstration programme on different aspects of scientific dairy management practice. Health care facility should be provided by concern cooperative and regular check camp organized by state government and dairy cooperatives.

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**CONFLICT OF INTEREST**

The authors of the paper declare no conflict of interest

**REFERENCES**

- Akhter, J., Asiwal, B. L. and Akhter, H. (2013). Knowledge and adoption of animal husbandry practices among the farmers of sikar district of Rajasthan. *Ind. J. Extn. Educ. & R.D.* 21; 196-199.
- Bhabhor, I. N., Vyas, H. U. and Patel, N. R. (2020) Knowledge of livestock farmers about various zoonotic diseases. *Guj. J. Ext. Edu.* 31(1):92-94.
- DAHD, Annual Report. (2020-21). Department of animal husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmer Welfare, Government of India.
- Meena, G. L., Tailor, R. and Sharma, F. L. (2012). Adoption of scientific dairy husbandry practices by tribal farmers. *Raj. J. Extn. Edu.* 20; 121-124.
- Meena, O. P., Sharma, N. K., Rajput, D. S., Yadav, M. L. and Godara, P. K. (2017). Adoption of improved animal husbandry practices: a comparative study of dairy farmers in Rajasthan. *Ruminant Science.* 6(2); 371-375.
- Prajapati., V. S., Singh R. R., Kharadi V. B. and Chaudhary S. S. (2015) Status of Breeding and Health Care Management Practices of Dairy Bovines in the Rural and Urban Areas of South Gujarat of India. *J. Anim. Sci. Adv.* 5(11); 1514-1521.
- Singh, M., Singh, A. and Kadian, K. S. (2018) Adoption of Improved Dairy Farming Practices by Dairy Farmers of Haryana. *Int. J. Curr. Microbiol. App. Sci.* 7(9); 3622- 3629.
- Singh, R. R., Chaudhary, S. S., Patel, N. B., Kumar, A. and Singh, V. K. (2017). Status of housing and feeding management practices of dairy animals in the coastal area of South Gujarat. *Ruminant Science.* 6(2); 365-369.