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Adoption of improved animal husbandry practices by dairy farmers

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Livestock sectors plays a very important role in Indian economy. It provides livelihood to two third of rural population. India has the largest livestock population and has a vast livestock resource. In the rural area of India, livestock rearing is one of the main income for the farmers. Livestock includes cattle, goat, buffalo, and pig and poultry species. It also acts as a source of protein in the form of meat, milk and egg to the households. Welfare of Indian rural population is ensured by the animal husbandry sectors, as the livelihood of majority of the famers depends on animal husbandry. Livestock sectors provides sustainable source of income for many marginal and small farmers. It also provides supplementary employment and leads to rural economy leverage and a profession with high export potential (Brindha 2017). However, the dairy livestock owners are yet ignorant with scientific management practices. If feeding, breeding, health care and other management practices fit in proper operation, it would be possible to reach the desired level of milk production (Godara *et al.* 2018). The present study aims to assess the adoption of improved animal husbandry practicies by dairy farmers.

The study was carried out in Rajkot district of Gujarat. Total 120 dairy farmers were selected rendomly for the study purpose. Primary data related to adoption of improved animal husbandry practicies was collected through personal interview of dairy farmers.

Adoption index was used to study the adoption of improved animal husbandry practices by farmers. The index was calculated through the following formula:

$$\text{Adoption index (AI)} = \frac{\text{Total adoption score (TAS)}}{\text{Total possible score (TPS)}} \times 100$$

$$\text{Mean score (MS)} = \frac{\text{Total adoption score (TAS)}}{\text{Total sample size}}$$

The score was assign for adoption of three standard sub-practices as regular adoption: 2, sometime adoption: 1 and non adoption: 0. The total score for a respondents was obtained by summing up the score obtained on each practice and mean scores was calculated. Further, rank was assign based on the mean score.

Adoption of calf rearing practices is given in Table 1. The colostrum feeding was at 1st rank because this practice was most important for the calf and colostrum is a survival calf food gating from the animals after lactation. The overall adoption was 47.14%. Colostrum feeding was most (99.58%) adopted practice and dehorning of calves was completely absent (0%).

Adoption of breeding management practices is given in Table 2. Observation of heat symptoms was at first rank because it is a first characteristics to identify animals when animals are in heat or periods time. The overall adoption of breeding management practices was 73.39%. Among all practices, observation of heat symptoms was most (98.75%) adopted while record keeping was least (55.83%) adopted practices.

Adoption of feeding management practices is given in Table 3. The feeding of dry fodder and green fodder were at first rank because dry and green fodder is a main food of the animals and generally farmers are first preferring to feeding dry and green fodder. The overall adoption was 68.04%. Among all practices, feeding of dry and green fodder was fully adopted (100%) and feeding of silage was not adopted (0.00%) practices.

Adoption of improved healthcare management practice is given in Table 4. The observation of ailing animals was at 1st rank because in ailing situation animals do not feed or reduce the milk quantity and also were very nervous. The overall adoption index for improved health-care management practices was 82.29%. Among all practices, observation of ailing animals was fully adopted (100%) and burying of dead animals was the least adopted (15.83%) practices.

Adoption of clean milk production practices is given in Table 5. Cleaning of udder before milking was at 1st rank. Cleaning of udder before milking is the first step for the clean milk production. The overall adoption index was observed at 75.77%. Among them, cleaning of udder before milking (99.17%) was the most adopted and testing milk against mastitis (18.75%) was the least adopted practices.

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Table 1. Adoption of calf rearing practices

Calf rearing practices	TAS	MS	AI	Rank
Cleaning of calf immediately after birth	196	1.63	81.70	2
Colostrum feeding	239	1.99	99.58	1
Cutting and disinfection of naval cord	48	0.40	20.00	6
Providing ATS and Vitamin A injection	61	0.51	25.42	5
Weaning of calves	178	1.48	74.17	3
Dehorning of calves	0	0.00	0.00	8
Periodic deworming	25	0.21	10.42	7
Regular vaccination	158	1.32	65.83	4
Overall adoption	905	0.94	47.14	

TAS, Total adoption score; MS, Mean score; AI, Adoption index.

Table 2. Adoption of breeding management practices

Breeding management practices	TAS	MS	AI	Rank
Observation of heat symptoms	237	1.98	98.75	1
Insemination within 24 hours	228	1.90	95.00	5
Natural services	154	1.28	64.17	7
Artificial insemination	196	1.63	81.67	6
Pregnancy diagnosis after 3 months	235	1.96	97.92	2
Servicing the milch animals within 60–90 days	230	1.92	95.83	3
Treatment of repeat breeding and anoestrus	229	1.91	95.42	4
Record keeping	134	1.12	55.83	8
Overall adoption	1409	1.47	73.39	

TAS, Total adoption score; MS, Mean score; AI, Adoption index.

Table 3. Adoption of feeding management practices

Feeding management practices	TAS	MS	AI	Rank
Feeding of dry fodder	240	2.00	100.00	I
Feeding of green fodder	240	2.00	100.00	II
Feeding of silage	0	0.00	0.00	X
Chaffing of green fodder	126	1.05	52.50	VII
Urea treatment of paddy straw	32	0.27	13.33	IX
Feeding of concentrate mixture	233	1.94	97.08	IV
Extra allowance of pregnant animals	233	1.94	97.08	V
Feeding of mineral mixture	211	1.76	87.92	VI
Grazing	78	0.65	32.50	VIII
Cultivation of fodder crops	240	2.00	100.00	III
Overall adoption	1633	1.36	68.04	

TAS, Total adoption score; MS, Mean score; AI, Adoption index.

Overall adoption of the improved animal husbandry practices by dairy farmers is given in Table 6. Improved health-care management was highly adopted practice followed by clean milk production, breeding management, feeding management and calf rearing practices respectively.

Table 4. Adoption of improved health-care management practices

Health-care management practices	TAS	MS	AI	Rank
Observation of ailing animals	240	2.00	100.00	I
Segregation of sick animals	219	1.83	91.25	IV
Treatment of sick animals	238	1.98	99.17	II
Regular washing of dairy animals	218	1.82	90.83	V
Cleaning and disinfection of shed	226	1.88	94.17	III
Control of ectoparasite in animals	199	1.66	82.92	VII
Protection from cold/ winter	202	1.68	84.17	VI
Burying of dead animals	38	0.32	15.83	VIII
Overall adoption	1580	1.65	82.29	

TAS, Total adoption score; MS, Mean score; AI, Adoption index.

Table 5. Adoption of clean milk production practices

Clean milk production practices	TAS	MS	AI	Rank
Washing of milch animals before milking	236	1.97	98.83	II
Cleaning of udder before milking	238	1.98	99.17	I
Full hand method of milking	235	1.96	97.92	III
Cleaning of milk utensils	233	1.94	97.08	V
Removing of first two streams of milk	235	1.96	97.92	IV
Teat dipping in antiseptic lotion	51	0.43	21.25	VI
Testing milk against mastitis	45	0.38	18.75	VII
Overall adoption	1273	1.52	75.77	

TAS, Total adoption score; MS, Mean score; AI, Adoption index.

Table 6. Overall adoption of improved animal husbandry practices

Adoption of improved animal husbandry practices	TAS	MS	AI	RANK
Adoption of calf rearing practices	905	0.94	47.14	V
Adoption of breeding management practices	1409	1.47	73.39	III
Adoption of feeding management practices	1633	1.36	68.04	IV
Adoption of improved health-care management practices	1580	1.65	82.29	I
Adoption of clean milk production practices	1273	1.52	75.77	II
Overall adoption	6800	1.38	69.11	

TAS, Total adoption score; MS, Mean score; AI, Adoption index.

Generally, farmers are highly focused on healthcare management of animals because animal's illness or weakness directly affect milk production.

Among improved animal husbandry practices, the highest adoption was of health-care management practices followed by clean milk production practices, breeding management practices, feeding management practices. The lowest adoption was found in calf rearing practices. Full

adoption was recorded in feeding of dry fodder, feeding of green fodder, cultivation of fodder crops and observation of ailing animals whereas non adoption of animal husbandry practices was observed in dehorning of calves and feeding of silage.

SUMMARY

Livestock sectors plays a very important role in Indian economy. It provides sustainable source of income for many marginal and small farmers. However, the dairy livestock owners are yet ignorant with scientific management practices. If feeding, breeding, health care and other management practices fit in proper operation, it would be possible to reach the desired level of milk production. The present study aims to assess the adoption of improved animal husbandry practicies by dairy farmers. Primary data was collected from 120 dairy farmers of Rajkot district. Adoption Index was used to study the adoption of improved animal husbandry practices by farmers. The results reveald that among improved animal husbandry practices, the highest adoption was of health-care management practices followed by clean milk production practices, breeding management practices, feeding management practices. The lowest adoption was found in calf rearing practices. Full adoption was recorded in feeding of dry fodder, feeding of green fodder, cultivation of fodder crops and observation of ailing animals whereas non adoption of animal husbandry practices was observed in dehorning of calves and feeding of silage.

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