

Dairy Farming Technologies Adopted by the Farmers in Bhilwara District of Rajasthan

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ABSTRACT

The present study was conducted in Bhilwara district of Rajasthan to know the adoption level of farmers regarding dairy farming technologies. In all, 180 farmers were selected randomly from three blocks of the Bhilwara district. The result of the study indicated that adoption level of farmers regarding dry fodder (94.6%), chaffing of fodder (44.6%), colostrums feeding to newly born calves (48.6%), deworming (28.4%) and drinking water (80%) were quite high. The adoption of dairy farming technologies was positively and significantly related with thirteen independent variables viz. age, education, family size, dairy experience, organization participation, land holding, livestock possession, annual income, economic motivation, market orientation, scientific orientation and knowledge of improved dairy management practices.

Key words: Adoption; Dairy farming; Technologies; Bhilwara; Rajasthan;

India has the highest level of milk production and consumption of all countries. The annual production was 186 million tonnes as of 2018. As of 2020, approximately 4.2 per cent of India's gross domestic product was due to dairy production. In 2019, the Indian dairy sector was reported to be growing at 4.9% yearly. The per capita availability of milk in India has increased 394gms/day 2018-19. India ranks first in milk production, accounting for 19% of world production. Livestock in general and dairying in particular play a vital role in socio-economic development of millions of rural households. Within Livestock sub-sector, dairying is an important economic activity accounting for about 67 per cent of the value of output of Livestock sub-sector in agriculture, which is higher than the value of output of wheat and paddy together. The dairy sector today provides 80 million farm households with the triple benefits of nutritive food, supplementary income and productive employment for family labour, mainly for women. The three key drivers of increasing milk demand includes population growth, urbanization and income growth. Dairying has become an important secondary source of income for millions of rural families and has assumed the most important role in providing employment and income generating opportunities

Various established organizations, like universities, research stations, state directorates of animal husbandry and livestock extension services act at different levels in order to generate and transfer the technologies amongst livestock farmers. Despite these efforts, adoption of recommended technologies in dairy farming sector has not been as widespread as it was anticipated. While reviewing the adoption research, Loganandhan and Singh (2003) reported that adoption behaviour of farmers is influenced by their socio-economic characteristics such as education, land holding, social participation and communication skills etc. in organic farming practices. The reason of poor adoption of dairy farming technologies amongst livestock farmers all over the world is not fully understood. Keeping this in view a study was conducted with the specific objective to study of dairy farming technologies adopted by the farmers as well as to study the factors associated with adoption of dairy farming technologies.

METHODOLOGY

The study was conducted in Bhilwara district of Rajasthan. Three Panchayat samities of the district namely Mandel, Kotri and Mandelgarh were purposely

selected where maximum animal husbandry activities were conducted by KVK and department. From each Panchayat samities, three villages were selected randomly. A list of animal rearing farmers was prepared and from each village twenty farmers were randomly selected for study purposes. Semi structured interview schedule was used to collect the data, using personal interview method. In all, 180 respondents were finally selected for the study. The socio personal traits, socio-economic and psychological variables of livestock farmers were taken as independent variables for the study purpose. The knowledge and adoption level of animal rearing farmers were measured. Adoption of dairy farming technologies was the dependent variable. Artificial insemination in cattle, vaccination against contagious disease, feeding green fodder, feeding concentrate and common dairy farming technologies were considered in the present study. To study adoption level scores obtained by each individual adopters were categorized into three groups as partly (score 1), to some extent (score 2) and fully (score 3). The summation of scores of respondents over these technologies plus score of four common dairy farming technologies was the overall adoption score of livestock owners in dairy farming technologies. Variety of statistical techniques like frequency distribution, percentage, means, standard error, t-test, product moment correlation was used to analyze the data.

RESULTS AND DISCUSSION

Knowledge level of animal owner farmers : The data presented in Table 1 indicated that knowledge level of farmers in case of breeding of dairy animals regarding Buffalo non- descript/ improved was found maximum (88.8%) as compare to the Artificial insemination (86.4%) for breeding of cows (85.8%), Artificial insemination (72.4%) Pregnancy diagnosis (58.6%) and castration of the male animals(48.6%). In case of feeding practices drinking water and dry fodder were known by cent percent respondents followed by feeding of concentrates during lactation (98.4%), colostrum feeding (91.6%), chaffing of fodder (90.0%), green fodder (84.4%), use of mangers (35.8%), balance concentrate(34.8%), feeding of minerals mixture (22.0%) and concentrates during pregnancy (15.0%).

The knowledge of the respondents regarding health & hygiene, approximately 40.53% of the respondents

were aware about the Cleaning/ grooming (62.4%), Cleaning of cattle shed (58.8%) and deworming (48.2%), hygiene steps before milking (34.6%), proper time of vaccination (28.8%) and isolation of sick animals(10.4%). The knowledge level of farmers about all the aspects included in clean milk production i.e. methods of milking, cleaning of udder and cleaning of hands & utensils were known by the 70.26, 78.0 and 81.20% respondents, respectively. Table 1 also indicates that knowledge of animal owners regarding marketing practices was observed for regular selling of milk (76.4%), followed by Selling of value added products (29.6%), The overall results revealed that the farmers were found to more familiar to all animal husbandry practices (53 to 70.36%). *Yadav (2019), Yadav and Khada (2009), Yadav et. al. (2009), Akter et. al. (2013)* observed the more or less same results.

Extent of adoption of animal husbandry practices by animal owner Breeding Practices : Table 1 indicates that 21.20 per cent of farmers had adopted crossbred cows and 38.6 per cent farmers adopted improved/superior buffalo. It was further observed that non-descript breeds of milch animals are pre-dominant in the study area. Artificial insemination (A.I.) is best technique for the purpose of animal breeding. But practice of Artificial Insemination in dairy animals had adopted by 26.5 per cent dairy farmers. Only 22.8 per cent dairy farmers made pregnancy diagnosis of their animals. The castration of animal was followed by 20.3 percent farmer. Thus, it can be concluded that adoption of artificial insemination. practice, rearing of crossbred and superior milch animals, and pregnancy diagnosis of their animals was poor. This might be due to unawareness of farmers about performance of improved milch animals, artificial insemination, animal breeding and pregnancy diagnosis of their animals in hospital, further distant location of hospitals and artificial insemination centres in the study area

Feeding Practices: Scientific feeding schedule that provides a higher plane of nutrition ensures better growth and an attainment of puberty resulting in quicker economic returns. From Table 1 it is clear that majority of farmers do not use the recommended feeding practices. Although, feeding of green fodder, dry fodder and concentrate are important inputs in milk production. Around 23.4 per cent of farmers fed green fodder to animals. But quality of green fodder was very poor

Table 1. Knowledge and adoption of animal management practices

Particular practices	Knowledge (%)		Adoption (%)		
	Yes	No	Full	Partial	No
<i>Breeding</i>					
Breeding of dairy animals					
a. Cow : cross / local	85.8	14.2	21.2	39.4	39.4
b. Buffalo: non- descript/ improved	86.4	13.6	38.6	42.2	19.2
Artificial insemination	72.4	27.6	26.5	38.6	34.9
Pregnancy diagnosis	58.6	41.4	22.8	32.4	55.2
Castration	48.6	51.4	20.3	42.6	37.1
Average	70.36	26.64	25.88	39.04	35.08
<i>Feeding</i>					
Balance ration					
a. Green fodder	84.4	15.6	23.4	32.6	44.0
b. Dry fodder	100	00.0	94.6	5.4	00.0
c. Balance concentrate	34.8	65.2	22.4	38.8	38.8
d. Feeding of concentrates during pregnancy	15.0	85.0	9.5	24.4	66.1
e. Feeding of concentrates during lactation	98.4	1.6	42.6	44.2	13.2
f. Minerals mixture/ common salt	22.0	88.0	14.2	32.6	53.2
Chaffing of fodder	30.0	70.0	44.6	36.4	19.0
Use of mangers	35.8	64.2	24.2	44.6	31.2
Colostrums feeding to newly born calves	91.6	8.4	48.6	41.4	10.0
Drinking water	100	00.0	80.0	20.0	00.0
Average	60.2	39.8	40.45	32.04	27.51
<i>Health & hygiene</i>					
Cleaning/ grooming	62.4	37.6	32.2	58.4	9.4
Proper time of vaccination	28.8	71.2	11.8	34.8	53.4
Hygiene steps before milking	34.6	65.4	16.4	28.2	55.4
Cleaning of cattle shed	58.8	41.2	32.6	48.0	19.4
Deworming	48.2	51.8	28.4	24.0	47.6
Isolation of sick animals	10.4	89.6	8.2	14.4	77.4
Average	40.53	59.47	26.97	34.63	38.40

because most of farmers collected green grasses from common property resources like forests, wastelands, common grazing land, roadside and banks of ponds. All the farmers fed required quantity of dry fodder to animals due to easy availability of dry fodder. About 22.4 per cent dairy farmers fed their animals with concentrates. Extra doses of concentrate are required for pregnant and lactating animals. But practices of extra doses of concentrate to pregnant animals were adopted only by 9.5 per cent farmer where as during lactation was 42.6 percent adoption in the study area.

Use of mineral mixtures/ common salt improves palatability and feed intake by animals. But practice of feeding of mineral mixtures/common salt was adopted by only 14.2 per cent farmers. Chaffed fodder became palatable for animal feeding. About 44.6 per cent farmers

feed chaffed fodder to their animals. To protect the newly born calves from diseases the Colostrums feeding is required. Colostrums feeding to the newly born calves were adopted by 48.6 per cent farmers. Whereas, only 24.2 per cent farmers feeding to the animals in manger. This might be due to lack of knowledge of importance of feeding.

Health and hygiene : Table 1 shows that less number of farmers were found to regular clean and groom (32.2 per cent), vaccinate their animals against contagious diseases (11.8 per cent), hygienic step before milking (16.4 per cent) and timely cleaning of cattle shed (32.6 per cent), deworming of calves (28.4 percent). Thus, it can be concluded that many of farmers were not aware of practices such as and isolation of sick animals. Further, few percentage of farmers adopted “no cost”

practices such as regular cleaning/ grooming, vaccination against contagious diseases, hygienic step before milking and timely cleaning of cattle shed. This might be due to lack of knowledge of farmers towards these practices. This is in agreement with the observations of *Yadav et al. (2009)* and *Meena, et.al.(2012)*.

Marketing Practices : The practice of regular selling of milk and selling of value added dairy products were followed by 32.8 per cent and 16.914.6 per cent of farmers, respectively. The irregular selling of milk and non-existence of dairy cooperative society in the study area might be due to low production of milk at individual farmer's level. The results are corroborated with the findings of *Meena, et.al. (2012)*.

Table 2. Relationship between Independent variables and adoption of dairy farming technology

Variables	'r' values	't' values
Socio –personal characteristics		
Age	0.7981	22.418**
Education	0.7650	7.89**
Family size	0.7456	7.15**
Dairy experience	0.6535	5.04**
Organization participation	0.7865	8.11**
Socio-economic characteristics		
Land holding	0.7265	4.56**
Livestock possession	0.7736	9.34**
Annual income	0.7246	8.13**
Credit behaviour	-0.1225	-0.62 ^{NS}
Material possession	0.3674	1.23 ^{NS}
Psychological characteristics		
Economic motivation	0.7211	6.96**
Market orientation	0.8776	6.04**
Scientific orientation	0.7111	7.20**
Knowledge of improved dairy	0.7467	7.08**
Management Practices	0.6982	7.65**

** Significant at 0.01 level of probability, NS :Non-ignificant

Correlation of adoption of dairy farming technology with independent variables : With the assumption that adoption of dairy farming technology is inclined by socio-personal, economic and psychological traits, the

relationship of these traits were analyzed. To assess the relationship between adoption of dairy farming technology and selected variables the coefficient of correlation was worked out and illustrated in Table 2. The data revealed that the correlation coefficient of thirteen variables viz., Age, Education, Family size, dairy experience, organization participation, land holding, livestock possession, annual income, economic motivation, market orientation, scientific orientation and knowledge of improved dairy management practices were found to have positive and significant relationship with adoption of dairy farming technology at 0.01 level of probability. However, Material possession is positively non-significant and credit behaviour had negative and non-significant relationship with adoption of dairy farming technology at 0.01 level of probability. Similar result were observed by *Patel et al. (2014)*

CONCLUSION

It can be concluded from the study that adoption of scientific dairy technologies such as breeding, feeding, health & hygiene, and marketing in study area was quite low to medium and unsatisfactory for development in dairy sector. The adoption of dairy farming technologies was positively and significantly related with Age, Education, Family size, dairy experience, organization participation, land holding, livestock possession, annual income, economic motivation, market orientation, scientific orientation and knowledge of improved dairy management practices were significant. This could consider 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 farmers. Therefore, scientists of KVK, Veterinary officers, Dairy development officers must periodically conduct training and awareness programmes with respect to vaccination, deworming, health aspect camps, feeding, breeding, health care and management etc. to boost up level of adoption of livestock owners in the scientific dairy husbandry practices

REFERENCES

- Akhter, J.; Asiwal, B.L. and Hussain, A. (2013). Knowledge and Adaoption of Animal Husbandry Practices among the Farmers of Sikar District of Rajasthan. *Indian J. of Ext. Edu. & Rural Devel.*, **21** : 196-199.
- Business, Line (2020). Indian dairy sector grew 6.4% annually over the last four years". Business Line. 25 July 2019. Archived from the original on 25 July 2020. Retrieved 21 August 2020.

- Department of Animal Husbandry, Dairying & Fisheries, (2018). National Action Plan for Dairy Development Vision-22, Ministry of Agriculture & Farmers' Welfare, Government of India, 2018.
- Hussain, Siraj (2020). India's COVID-19 crisis has placed its dairy farmers at a crossroads". The wire. archived *from the original on 20 August 2020*. Retrieved 21 August 2020
- Letha Devi, G., (2013). Adoption of dairy farming technologies by livestock farmers. *Indian Res. J. of Ext. Edu.*, **13**(2) : 57-61.
- Loganandhan, N. and Singh, P. (2003). Adoption of organic farming : Profile and motives of farmers. *Indian J. of Ext. Edu.*, **39** (1&2) : 35-40.
- Meena, G.L.; Tailor, Ravi and Sharama, F.L. (2012). Adoption of scientific dairy husbandry practices by tribal farmers. *Rajasthan J of Ext. Educ.*, **20** : 121-124.
- NDDDB, (2020). Milk Production in India: Milk production and per capita availability of milk in India. National Dairy Development Board, Government of India. Archived from the original on 17 August 2020. Retrieved 28 August 2020.
- Patel, Pooja and Patel, M.M.(2014). Entrepreneurial behaviour of dairy farmers. *Indian Res. J. of Ext. Edu.*, **14** (2) : 46-49.
- Yadav C.M.; Bhimawat, B.S. and Khan, P.M. (2009). Existing breeding and health care practices of cattle in tribals of dungarpur district of Rajasthan. *Indian Res. J. Ext. Edu.*, **9** (1) : 36-43
- Yadav, C.M. (2019). Adoption of Scientific Goat Rearing Practices in Bhilwara District of Rajasthan. *Indian Res. J. Ext.Edu.*, **19** (1) : 49-51.
- Yadav, C.M. and Khada, B.S. (2009). Management practices and performance of goats in tribal belt of Dungarpur district in Rajasthan. *Indian J. Small Ruminant*, **15** (1) : 131-133.

