

**RESEARCH ARTICLE :**

# Knowledge and adoption level of animal scientific practices by milk producers in Chhotaudaipur district of Gujarat

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**SUMMARY :** Livestock are an integral part of agriculture in India and are likely to be the instruments of future growth and development of the agricultural sector. They generate employment, provide draught power, manure and earn foreign exchange through exports. Additionally, livestock make substantial contributions to environmental conservation and provide domestic fuel to save on the use of petro-products. Although the per capita consumption of foods of animal origin is low in India, demand has been rising due to the growing human population, sustained growth in per capita incomes and increasing urbanization. Dairying is an integral part of the Indian economy providing subsistence to small and marginal farmers and landless laborers. Most of the rural farmers, who keep dairy animals, do not follow modern dairy management practices. This study was conducted on knowledge and adoption level of improved animal husbandry practices. Result revealed that majority of dairy farmers (53.00 %) had medium knowledge level, whereas 22.00 per cent and 25.00 per cent dairy farmers were having low and high knowledge level about improved animal husbandry practices, respectively. Majority of the members (51 %) were found to be medium adopters, while 27 per cent members were low adopters and 22 per cent of the members were high adopters.

**KEY WORDS :**

Knowledge, Adoption, Milk producers, Animal scientific practices

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## BACKGROUND AND OBJECTIVES

Dairying provides millions of small and marginal farmers and landless laborers means of their subsistence. Most of the rural farmers, who keep dairy animals, do not follow modern dairy management practices. There is an urgent need to sensitize the dairy farmers about modern technologies and scientific interventions in dairy production, in order to

enhance milk yield and milk quality from dairy animals. Dairying is an integral part of the Indian economy, more so, the rural economy. The contribution of this sector to the national income is invaluable, estimated to be about eight per cent of the gross domestic product (GDP) and about 16 per cent to agricultural economy (Rajagopalan, 1996; Bhasin, 1997 and India, 1998). At the household level,

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dairying plays an important role in improving the economic condition of 70 million farm families. This sector provides insurance against crop failures and helps directly in increasing crop production by making available draft power, organic manure and cash income on a regular and day to day basis. Low production in India is mainly due to low level of knowledge about improved dairy husbandry practices of the dairy farmers. Hence, this study was conducted with the following specific objectives.

- To assess the level of knowledge of improved animal husbandry practices.
- To find out the extent of adoption of improved animal husbandry practices among the farmers.
- To ascertain the association between selected independent variables and extent of adoption of respondents about improved animal husbandry practices.
- To identify the constraints being faced by the farmers in improved animal husbandry practices.

Agriculture and allied sectors like forestry, logging and fishing accounted for 17 per cent of the GDP and employed 49 per cent of the total workforce in 2014. As the Indian economy has diversified and grown, agriculture's contribution to GDP has steadily declined from 1951 to 2011, yet it is still the largest employment

source and a significant piece of the overall socio-economic development of India. Crop yield per unit area of all crops has grown since 1950, due to the special emphasis placed on agriculture in the five-year plans and steady improvements in irrigation, technology, application of modern agricultural practices and provision of agricultural credit and subsidies since the green revolution in India. However, international comparisons reveal the average yield in India is generally 30 per cent to 50 per cent of the highest average yield in the world. The states of Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Andhra Pradesh, Telangana, Bihar, West Bengal, Gujarat and Maharashtra are key contributors to Indian agriculture.

## RESOURCES AND METHODS

The study was conducted in Chhotaudaipur district of Gujarat. Five talukas of Chhotaudaipur district were selected randomly (Table A).

A village wise comprehensive list of dairy families residing in different villages was prepared with the help of Dairy Co-operative, village Patwari and local leader. Two villages were selected from each taluka. Thus, a total of ten villages were selected from the five taluka of the district (Table B).

Sr. No.	Name of Taluka	Total number of villages	Total no. of Panchayats	Total no. of dairy (In Taluka)	Total no. of dairy farmers
1.	Chhotaudaipur	202	44	51	4593
2.	Kawant	173	46	45	4056
3.	Naswadi	275	60	50	4774
4.	JetpurPavi	257	91	146	16092
5.	Sankheda	318	92	159	21251

Name of Tehsil selected	Total no. of villages	No. of villages selected	Name of selected villages	Total no. of milk producer	No. of farmers selected
Chhotaudaipur	202	2	Raisinghpura	103	6
			Dhandhoda	134	7
Kawant	173	2	Krjwant	173	9
			Raypur	162	9
Naswadi	275	2	Akona	213	11
			Colamba	193	10
JetpurPavi	257	2	Kallarani	268	14
			Haripura	74	5
Sankheda	318	2	Sundarpura	362	19
			Ambapura	187	10
		10		1869	100

From the 10 selected villages a sample of 100 dairy farmers was selected in such a manner that the number of milk producers selected from each village was proportionate to the total number of dairy farmers of the respective village.

## OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

### Measurement of knowledge level of dairy farmers about improved animal husbandry practices :

#### *Knowledge level of dairy farmers about improved animal husbandry practices :*

According to the methodology the minimum and maximum score, a respondent could secure on knowledge level was 0 to 110, respectively. It was revealed that the dairy farmers secured knowledge score between 50 and 85 on improved animal husbandry practices. The farmers were grouped into three categories, using mean (75.24)  $\pm$  standard deviation (7.83). Members who scored below 67.41 were grouped under low knowledge level, the members who scored from 67.41 to 83.06 were considered under medium knowledge level and those who obtained score above 83.06 knowledge score were categorized under high knowledge level about improved animal husbandry practices (Table 1).

The data in Table 1 reveal that majority of dairy farmers (53 %) had medium knowledge level, whereas

22 per cent and 25 per cent dairy members were having low and high knowledge level about improved animal husbandry practices, respectively.

#### *Knowledge level of dairy farmers about improved practices :*

Individual practice wise knowledge of dairy farmers was measured. As many as six practices were included to assess the knowledge level of respondents as given in Table 2.

Table 2 indicates that dairy farmers possessed maximum knowledge about milking of animals with mean per cent score (MPS) of 80.28. They possessed less knowledge about improved breeds of animals with mean per cent score (MPS) 51.76. The table indicates that knowledge of respondents regarding other aspects like breeding, management; health care and feeding were found to be 76.38, 67.87, 67.70 and 64.45 MPS, respectively.

### Extent of adoption of improved animal husbandry practices among dairy farmers:

#### *Distribution of dairy farmers according to the extent of adoption :*

According to methodology the minimum and maximum score, a respondent could secure on the extent of adoption was 0 to 55, respectively. It is revealed that the members secured adoption score between 26 and 48. The respondents were grouped in to three categories, using mean (41.36)  $\pm$  standard deviation (4.07).

Knowledge score	Knowledge level	No. of respondents	Per cent
Below 67.41	Low	22	22.00
From 67.41 to 83.06	Medium	53	53.00
Above 83.06	High	25	25.00
	Total	100	100

$\bar{X}$ =75.24,  $\sigma$  = 7.83

Sr. No.	Improved practices	Dairy farmers
1.	Improved breeds	51.76 VI
2.	Breeding	76.38 II
3.	Feeding	64.45 V
4.	Management	67.87 III
5.	Milking	80.28 I
6.	Health care	67.70 IV
	Overall	68.07

Table 3 : Knowledge of live-stock keepers about improved practices				(Practices wise)		
				Total score	MPS	Rank
<b>Improved breeds</b>						
1.	What are the important local breeds of cattle for higher milk production? (a) Gir (b) Sahiwal (c) Kankrej (d) Dangi	(4)	210	52.50	I	
2.	What are the important exotic breeds of cattle for milk production? (a) Jersey (b) Reddane (c) Holstein Friesian	(3)	153	51.00	IV	
3.	What are the important breeds of buffalo? (a) Jaffarabadi (b) Surti (c) Banni (d) Mehsani	(4)	204	51.00	III	
4.	Why are the recommended breeds important? (a) For higher milk production (b) For higher fat percentage (c) For good draft power (d) For early and regular breeding programmes.	(4)	209	52.25	II	
	Over all MPS (15)*100(Farmers)		776	51.76	VI	
<b>Breeding</b>						
5.	What are the possible ways by which animals can be bred? (a) A.I. (b) Natural		76	76.00	IX	
6.	What is the age of puberty in animals? (a) Buffalo-3-3.5 yrs. (b) Buffalo-4-4.5 yrs. (c) Cattle – 1.5-2 yrs. (d) Cattle-2-2.5 yrs.	(2)	175	87.50	IV	
7.	What is the age of first calving of the animals? (a) Buffalo-3.5-4 yrs. (b) Buffalo-4-4.5 yrs. (c) Cattle-3-4 yrs. (d) Cattle-4-4.5 yrs.	(2)	152	76.00	VIII	
8.	What are the advantages of A. I.? (a) Quick or faster results in progeny improvement (b) Milk production will be increased. (c) Avoiding transmission of diseases. (d) Better utilization of proven bull.	(4)	350	87.50	III	
9.	What are the symptoms of animal in heat? (a) Bellowing. (b) Mucous discharge from vagina. (c) Restlessness and frequent urination (d) Mounting on other animals.	(4)	340	85.00	IV	
10.	What is the appropriate time for mating? (a) Beginning of oestrus (b) Middle of oestrus (c) End of oestrus	(1)	80	80.00	V	
11.	Mention the characteristics of sire to be used for breeding - (a) According to its pedigree performance (b) Good in phenotype. (c) Free from anatomical defects and fit for breeding (d) Free from communicable diseases. (e) Proven sire.	(5)	460	92.00	I	
12.	Please indicate after how many days an animal repeat heat? (a) Buffalo- 21 days (b) Buffalo- 30 days (c) Cattle- 21 days (d) Cattle- 30 days	(2- means 1 marks from each one right answer selected)	120	60.00	X	
13.	How much time is required for animals to conceive after calving? (a) Buffalo- 60 to 80 days (b) Buffalo- 80 to 100 days (c) Cattle- 60 to 80 days (d) Cattle- 80 to 100 days	(2)	90	45.00	XIII	
14.	What should be done if the animal does not come in heat? (a) Consult veterinarian (b) Feed such things which have heating effect like roughages, minerals etc. (c) Traditional medicine inducing (d) All the above	(3)	230	76.66	VII	

Contd... Table 3

Contd...Table 3

15.	If the placenta is not shed when should it get removed 36 to 48 hours? Yes/No	(1)	90	90.00	II
16.	Is there need of sire in the village even if A.I. is practiced? Yes/No	(1)	50	50.00	XII
17.	Do you know that the chance of conception by A.I. is less?(1) Yes/No	(1)	54	54.00	XI
18.	Which service helps in preventing diseases of reproductive organs?(1) (a) Natural (b) A.I.	(1)	80	80.00	VI
19.	How many times a sire can service for better conception?(1) (a) Once a day (b) Twice a week (c) Once a week (d) Twice a week	(1)	40	40.00	XIV
20.	Which type of bull should be used for breeding? (a) Exotic (b) Pure bred (c) Cross bred (d) All the above	(1)	90	90.00	II
21.	What is the pregnancy diagnosis time? (a) After 2 months of insemination (b) After 3 months of insemination (c) After 4 months of insemination (d) After 6 months of insemination	(1)	80	80.00	VII
22.	What should be the calving interval in cow/buffalo? Buffalo: (a) 12-15 months (b) 15-18 months (c) Above 18 months Cow: (a) 11-12 months (b) 13-14 months (c) Above 15 months Over all MPS (34)*100(Farmers)	(1)	40	40.00	XV
<b>Feeding</b>			2597	76.38	II
23.	How much quantity of ration is necessary for milch animals?(3) (a) Green fodder (20-30 kg) (b) Concentrates (2-4 kg) (c) Dry fodder (Not more than 10 kg)	(3)	162	54.00	V
24.	What is good ration for dairy animals? (a) Only concentrates and straw. (b) Some green fodder + straw. (c) Green fodder + concentrate. (d) Balanced ration including plenty of green fodder and dry roughage + concentrate.	(1)	70	70.00	IV
25.	Why is green fodder necessary for animals? (a) Increase Milk Production (b) Improve the health of the animal. (c) Increase digestibility and palatability of dry fodder.	(3)	230	76.66	III
26.	What are the methods used to increase the utilization of fodder?(3) (a) By way of chopping. (b) By way of treating fodder with urea and molasses. (c) By way of feeding mixed fodder (Green + dry).	(3)	260	86.66	I
27.	What are the fodder crops grown in your area? (a) Lucerne (b) Maize (c) Oat (d) Jowar	(4)	327	81.75	II
28.	What type of ration should be feed to a cow/buffalo just after calving?(1) (a) Laxative concentrates rich bran Bajra and Maize (b) Any concentrates. (c) Only green fodder (d) Only dry fodder.	(1)	52	52.00	VI
29.	When should a newly born calf be allowed for sucking its mother's milk? (a) Within one hour (b) Within 1-2 hours (c) After two hour	(3)	92	46.00	VIII
30.	How much colostrum should be given to new born? (a) 1/10 <sup>th</sup> of its body weight per day two times (b) 1/20 <sup>th</sup> of its body weight per day one time. (c) 1/30 <sup>th</sup> of its body weight per day one time (d) 1/40 <sup>th</sup> of its body weight per day one time. (e) Not Known	(1)	51	51.00	VII

Table 3 contd...

Table 3 contd...

31.	Is Feeding minerals and salts essential to animals? (a) Yes (b) No (c) Not known	(1)	54	54.00	V
32.	What is the common method of fodder conservation in your area? (3) (a) Silage making (b) Hay making (c) Not known Over all MPS (22)*100(Farmers)		120	40.00	IX
<b>Management</b>					
33.	Name of the type of house for keeping animals- (a) Loose housing (b) Conventional(c) Both	(2)	129	64.50	V
34.	How are all the cows/buffaloes kept in housing system? (1) (a) All the cows/buffaloes are kept together. (b) The animals are divided into different categories and kept separately.		60	60.00	VII
35.	What are the qualities of a good house of animals? (a) Saving of labour. (b) Comfortable to animals. (c) Less construction cost. (d) Protection against adverse climatic condition.	(4)	310	77.50	III
36.	Weaning is a good practice- (a) Yes (b) No (c) Not known	(1)	40	40.00	VIII
37.	What type of housing is most appropriate for animals? (1) (a) Kaccha (b) Pucca (c) Semi Pucca		60	60.00	VII
38.	At what age male calf should be castrated? (a) Within 6 months of age. (b) Within 9months of age. (c) Within 12 months of age. (d) Within 15 months of age.	(1)	70	70.00	IV
39.	What stage of pregnancy should one stop milking of a cow? (a) Two months before calving. (b) Three months before calving. (c) Four months before calving. (d) Five months before calving.	(1)	80	80.00	I
40.	What makes a good house for animals? (a) It must be well ventilated. (b) House with close confinement. (c) Open house system.	(3)	190	63.33	VI
41.	What type of flooring should be there for animals in a shed? (a) Kaccha (b) Pucca (c) Semi pucca Over all MPS (15)*100(Farmers)	(1)	79	79.00	II
<b>Milking</b>					
42.	Which is the correct method of milking? (a) Full hand method (b) Knuckling (c) Stripping method (d) Do not know	(1)	89	89.00	I
43.	After how many days is the colostrum free milk available from animals? (a) 3-5 days (b) 6-8 days (c) 9-11 days (d) 12-14 days	(1)	81	81.00	II
44.	What are the points related to clean milk production? (a) Cleaning the udder with clean water. (b) Use of clean utensil. (c) Washing the hand before milking. (d) Use of milk filter (e) Hygienic milk storage. Over all MPS (7)*100(Farmers)	(5)	392	78.40	III
<b>Health care</b>					
45.	Name some of the important diseases of animals. (a) F.M.D. (b) H. septicemia (c) Black quarter (d) Rinderpest	(4)	141	35.25	VI
46.	What safety measures are to be taken to keep the animal house hygienic?(4) (a) Good drainage facility. (b) Drain and gutter with more exposure to sunlight. (c) Daily cleaning. (d) Regular spraying of disinfectant.		260	65.00	V
47.	How should the cow/buffalo be treated when they suffer from external parasites ( <i>i.e.</i> ticks)? (1) (a) Housing remedies (b) By washing animals with clean water (c) Applying insecticides (d) By dipping in dipping water tank		80	80.00	III
48.	If the animal is suffering from diseases then what should be done?(4) (a) Take veterinary help (b) Timely vaccination against contagious diseases. (c) Isolation of diseased animals (d) Give comfort to animals.		300	75.00	IV
49.	How can you say that the animal is ill? (a) Animal becomes lazy. (b) Stops rumination. (c) Stops feeding.	(3)	280	93.33	I
50.	What is the best time for vaccinating animals against infectious diseases?(1) (a) May-June (b) July-August (c) Sept-October (d) Jan-feb. Over all MPS (17)*100(Farmers)		90	90.00	II
			1151	67.70	IV

**Table 4 : Distribution of dairy farmers under different categories** (n=100)

Adoption score	Extent of adoption	No. of respondents	Per cent
Below 37.29	Low	27	27.00
From 37.29 to 45.42	Medium	51	51.00
Above 45.42	High	22	22.00
	Total	100	100

$X = 41.36, \sigma = 4.07$

**Table 5 : Extent of adoption of improved animal husbandry practices by dairy farmers** (n=100)

Sr. No.	Improved practices	Dairy farmers	
1.	Breeding	64.25	III
2.	Feeding	71.15	I
3.	Management	55.24	V
4.	Milking	67.75	II
5.	Health care	59.22	IV
	Overall	63.54	

Respondents who scored below 37.29 were grouped under low adoption, the respondents who scored from 37.29 to 45.42 were considered under medium extent of adoption and those who obtained score above 45.42 were categorized under high adoption about improved animal husbandry practices.

The data in Table 4 shows that majority of members (51 %) were found to be medium adopters, while 27 per cent members were low adopters and 22 per cent of the members were high adopters.

### Extent of adoption of improved animal husbandry practices by dairy farmers :

Extent of adoption individual practices-wise was worked out. For this, mean per cent scores (MPS) were calculated for each practice and the statistical data have been presented in Table 5.

The data in Table 5 indicate that dairy farmers adopted feeding of animals to the highest extent with MPS 71.15 (Rank I). The table further shows that adoption of management ranked last with MPS 55.24. The data incorporated in the table reveal that dairy farmers had adopted practices like milking, breeding and health care, with 67.75, 64.25 and 59.22 MPS, respectively. The overall adoption of dairy farmers about improved animal husbandry practices was 63.54.

### Conclusion :

Since majority of the respondents had medium knowledge level about improved animal husbandry practices, efforts are needed to bring about change in

knowledge of respondents from low to medium and medium to high levels. The milk producers are required to increase their knowledge about improved animal husbandry practices in feeding and health care practices. Hence, it is suggested that frequent training should be organised on need based aspects. Farmers had very low adoption rate of management practices so there is need for capacity building among farmers so that they easily adopt good and beneficiary practices.

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### REFERENCES

- Bhasin, N.R.** (1997). The ninth five year plan. *Indian Dairyman*, **49**(2) : 12-20.
- Dangi, K.L.** and Intodia, S.L. (1998). Adoption behaviour of contact and follower farmers under T&V system in Indira Gandhi canal project area of Rajasthan. *Rajasthan J. Extn. Edu.*, **2** (1) : 50-55.
- Dwivedi, R.P.**, Meena, B.S. and Ramana, D.B.V. (2002). Analysis of small scale dairy farming in Bundelkhand. *Ind. Res. J. Extn. Edu.*, **2** (1) : 83-86.
- India. (1998). A reference manual. Comp. and ed. research, reference and training division, Director, publication Division, Ministry of information and Broadcasting, Government of India, Patiala House. New Delhi.
- Kaushik, S.** and Singal, S. (1993). Innovation of rural women in dairy co-operative societies in Haryana. *Indian Coop. Rev.*, **30** (4) : 367-376.

- Khan, M. S.,** Sankhala, G. and Das, B.C. (2004). Knowledge level of dairy entrepreneurs about improved dairy farming practices. *Indian Res. J. Extn. Edu.*, **4** (3): 49.
- Khan, P.M.** and Chouhan, J. (2005). Adoption gap in improved technology of A.H. *Indian Res. J. Extn. Edu.*, **5** (1) : 63.
- Kumar, R.,** Fulzele, R.M., Aggarwal, S.B. and Sankhala, G (2001). Adoption rate and extent of knowledge of dairy farmers regarding scientific dairy farming practices. *J. Dairyng, Foods & Home Sci.*, **20** (2) : 112-119.
- Marwale, P.V.,** Dikle, R.N. and Bhadarge, H.H. (1995). Relationship between socio-economic and psychological characteristics and adoption of feeding practices. *Maharashtra J. Extn. Edu.*, **24** : 243-245.
- Meena, B.L.** (1994). A study on adoption and training needs of tribal women in improved dairy farming practices in Jaipur District (Rajasthan). M.Sc.(Ag.) Thesis, National Dairy Research Institute, Karnal, HARYANA (INDIA).
- Meena, L.R.** (1999). Role of tribal and non-tribal farm women and their training needs in improved animal husbandry in Udaipur district of Rajasthan. M.Sc. (Ag.) Thesis, Rajasthan Agricultural University, Bikaner, Campus, Udaipur (RAJSTHAN) INDIA.
- Rajagopalan, S.** (1996). Food and nutrition: correcting the imbalance .The Hindu Survey of Indian Agriculture Year Book, Chennai, 39-45.
- Rahman, J.,** Kolita, G. and Sharma, K. (2005). Improved dairy practices adopted by Mizo farmers. *Agric. Extn. Review*, **17** : 15-16.
- Sankhala, G.** and Chand, R. (2002). Knowledge status of tribals improved dairy farming practices. *Rajasthan J. Extn. Edu.*, **7** : 69-72.
- Sankhala, G.,** Singh, S., Meena, B.S. and Meena, G.P. (2004). Impact of dairy farming interventions introduced through technology assessment and refinement (IVLP). *Ind. Res. J. Extn. Edu.*, **4** (1&2) : 214.
- Sheela, B.** and Swamy, B.S. (1994). Problems of dairy women. *Maharashtra J. Extn. Edu.*, **13** : 295-296.
- Sinde, V.G.,** Sangle, G.K. and Dikle, R.N. (1998). Factors associated with adoption of improved dairy practices by farmers. *Maharashtra J. Extn. Edu.*, **18** : 198.
- Sirohi, S.** and Sirohi, S.K. (1997). Knowledge level and constraints to adoption of scientific dairy farming practices among farmers of Chinndwara district (M.P.). *J. Dairy. Foods & Home Sci.*, **16** (1) : 28-36.
- Tripathi, Hema,** Kunzrum, O.N. and Bisht, G.S., (1995). Knowledge level of farm women about dairy farm technologies. *Indian J. Dairy Sci.*, **48** (5) : 346-348.
- Verma, O.P.** and Tyagi, K.C. (1993). Adoption behavior of dairy farmers. *Indian Dairyman*, **45**(6) : 233-236.
- Yedukkondalu, R.,** Rao, B.V. Raghavendra and Rao, K. Saryan (2000). Problems and prospects of dairying in Medak district of Andhra Pradesh, *Indian J. Dairy Sci.*, **53** : 434-440.

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