

Original Research Article

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## Comparative Adoption Level of Improved Animal Husbandry Practices by Dairy Farmers of Kheda and Panchmahal Districts of Middle Gujarat, India

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### ABSTRACT

#### Keywords

Dairy farmers of Gujarat, Adoption level, Breeding practices, Milking practices, Feeding practices, Calf rearing practices.

#### Article Info

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The study was conducted in Kheda and Panchmahal districts of middle Gujarat during 2015-16 to assess the comparative adoption level of improved animal husbandry practices by dairy farmers of Kheda and Panchmahal districts of Gujarat. Four talukas from each district, five villages from each taluka and five respondents/dairy farmers from each village were randomly selected, thus covering 40 villages and a total of 200 respondents. The study indicated that in Kheda district most of the dairy farmers (65.00 %) possessed medium level of adoption followed by high (18.00 %) and low (17.00 %), whereas in Panchmahal district, more than half (58.00%) of the dairy farmers had medium level of adoption followed by 21.00 % each in high and low levels of adoption. The overall adoption level with regard to improved animal husbandry practices in Kheda district respondents was to the extent of 62.78 % as compared to 52.83 % in case of Panchmahal district. Correlation coefficient of dairy farmers' antecedent variables and their adoption level about improved animal husbandry practices indicated that variables like education, social participation, land holding, annual income, herd size and mass media exposure of Kheda district dairy farmers and annual income, herd size, risk orientation, scientific orientation and extension contact of Panchmahal district dairy farmers established positive and significant correlation with adoption level of improved animal husbandry practices.

### Introduction

India ranks first in the world with annual milk production of 155.5 million tones. Most of the milk is produced from the animals reared by small and marginal farmers and landless laborers. The average per capita availability of milk is 337 grams in India and 545 grams in Gujarat (TOI, 2016). During 11<sup>th</sup> five year plan (2007-08 to 2011-12), the average annual growth rate of milk production in India was 4.5 %. Gujarat shared 7.78 % of India's total milk production with a production of 10.3 million tones and holds 4<sup>th</sup> position in the

country. Milk production in Gujarat during 2012-13 has increased by 5% than during 2011-12 (Anonymous 2014). Despite India's first rank in world milk production, the average productivity of crossbred cattle, indigenous cattle and buffaloes is 6.87, 2.14 and 4.57 kg of milk per day per animal, respectively. This is much lower as compared to the developed countries. The probable reasons for lower productivity are poor germplasm for milk production, inadequate feed and fodder resources as well as

inadequate healthcare facilities. Moreover, reasons like poor adoption and diffusion of new/ improved animal husbandry technologies/practices and poor knowledge level of the dairy farmers were found responsible for lower production than the actual potential (Chander *et al.*, 2010). The objective of the present study was to compare the adoption level of improved animal husbandry practices by dairy farmers of Kheda and Panchmahal districts of middle Gujarat.

### **Materials and Methods**

The study was conducted in Kheda and Panchmahal districts of middle Gujarat. Kheda and Panchmahal districts were selected purposively for the study, because AMUL and Panchamrut Dairies are co-operative milk unions functioning in Kheda and Panchmahal districts, respectively. Animal husbandry is the very important economic activity of rural area in these districts. Both these districts are under the jurisdiction area of Anand Agricultural University, Anand and in recent past, both the districts were bifurcated to form two new districts, viz., Anand (from Kheda) and Dahod (from Panchmahal).

Four talukas from each district and five villages from each taluka were randomly selected. Thus, total forty villages were included in the study. From each village, five respondents/dairy farmers were randomly selected, thus making a total of 200 respondents/dairy farmers for this investigation. The impact was assessed by comparing the response of Kheda and Panchmahal districts dairy farmers towards adoption level of improved animal husbandry practices, viz., calf rearing, feeding, breeding, milking, healthcare and general management. The selected respondents were interviewed with the help of pre-tested structured interview schedule designed for this purpose.

The data thus collected were statistically analyzed to correlate respondents' profile with improved animal husbandry practices in two districts.

### **Results and Discussion**

The comparative adoption level of dairy farmers between two districts covered under study and the results so obtained are presented in Table 1. The data clearly revealed that majority of the respondents in both Kheda (65.00 %) and Panchmahal (58.00 %) districts had medium level of adoption. The present findings are in agreement with the earlier studies (Hamdani 2008, Rizwan *et al.*, 2015). Dairy farmers with low (17 and 21 %) and high (18 & 21 %) levels of adoption were nearly same in both the districts. Average adoption index was  $65.10 \pm 1.89$  in Kheda district and  $54.72 \pm 1.59$  in Panchmahal district. The higher adoption index observed in respondents of the Kheda district might be attributed to their higher knowledge index as compared to their counter part of Panchmahal. Overall adoption index observed was  $59.91 \pm 1.20$ . The data implied that still farmers of Panchmahal district were not adopting 45.00 % of improved animal husbandry practices, and the corresponding value for Kheda district was 35.00 %.

The component-wise adoption level of improved animal husbandry practices by the respondents (Table 2) showed that reproductive (73.30 %), healthcare (72.25 %) and feeding (69.90 %) management practices were adopted by majority of the respondents. However, less numbers of farmers adopted milking management (36.50 %) and general management (34.17 %) practices. Prajapati (2011) reported comparable adoption rate for calf management practices. Similarly Rizwan *et al.*, (2015) found parallel adoption rate to that of present study in breeding management practices. Moreover, adoption was higher in

Kheda district (62.78 %) than the Panchmahal district (52.83 %) in all the improved animal husbandry practices. Overall 57.80 % of the respondents adopted improved animal husbandry practices. The correlation coefficients of dairy farmers' antecedent variables and their adoption level about improved animal husbandry practices (Table 3) indicated that in Kheda district the education, land holding, annual income and herd size had positive and highly significant

( $p < 0.01$ ) association, whereas social participation and mass media exposure had positive and significant ( $p < 0.05$ ) association with adoption of improved animal husbandry practices. Further, family size and experience in dairy farming had negative and highly significant ( $p < 0.01$ ) correlation, whereas attitude towards dairy farming had negative and significant ( $p < 0.05$ ) association with adoption of improved animal husbandry practices.

**Table.1** Levels of the adoption index of improved animal husbandry practices by the dairy farmers in the study area

Sr. No.	Adoption index of improved animal husbandry practices	N	Percentage
Kheda district (Mean = 65.10, SD =18.88)			
1	Low (< 48.53)	17	17.00
2	Medium (48.54 to 81.67)	65	65.00
3	High (> 81.67)	18	18.00
	Total	100	100.00
Panchmahal district (Mean = 54.72, SD =15.94)			
1	Low (< 38.78)	21	21.00
2	Medium (38.78 to 70.66)	58	58.00
3	High (> 70.66)	21	21.00
	Total	100	100.00
Overall (Mean = 59.91, SD = 17.03)			
1	Low (< 42.88)	41	20.50
2	Medium (42.89 to 76.94)	134	67.00
3	High (> 76.94)	25	12.50
	Total	200	100.00

$\chi^2 = 1.05$  NS

**Table.2** Component-wise adoption level of improved animal husbandry practices by respondents in villages of Kheda and Panchmahal districts

Sr. No.	Practices	Kheda (N=100)	Panchmahal (N=100)	Overall (N=200)	Rank
1	Calf management	62.00	59.40	60.70	IV
2	Feeding management	77.00	62.80	69.90	III
3	Milking management	37.60	35.40	36.50	V
4	Health management	81.33	63.17	72.25	II
5	Reproductive management	81.40	65.20	73.30	I
6	General management	37.33	31.00	34.17	VI
	Overall	62.78	52.83	57.80	

**Table.3** Correlation coefficients between respondents' profile and adoption level of improved animal husbandry practices

Sr. No.	Profile	Correlation coefficients ('r' value)	
		Kheda	Panchmahal
1	Age	-0.161	-0.113
2	Education	0.461**	0.010
3	Caste	0.160	-0.107
4	Family size	-0.265**	-0.138
5	Experience	-0.348**	-0.033
6	Social participation	0.198*	0.137
7	Land holding	0.290**	0.152
8	Annual income	0.347**	0.201*
9	Herd size	0.321**	0.255*
10	Economic motivation	-0.019	0.157
11	Risk orientation	0.182	0.209*
12	Scientific orientation	-0.065	0.210*
13	Achievement motivation	0.164	0.120
14	Attitude towards dairy farming	-0.216*	-0.051
15	Mass media exposure	0.235*	0.184
16	Extension contact	-0.062	0.241*

\*p<0.05, \*\* p<0.01

**Table.4** Stepwise regression analysis of respondent's profile and adoption of improved animal husbandry practices in Kheda and Panchmahal districts

Variables	Unstandardized Coefficients		Standardized Coefficients	't' value	Sig.
	B	Std. Error	Beta		
Kheda district (R <sup>2</sup> = 38.20 %)					
(Constant)	42.704	5.902	--	7.236	0.000
Education	5.029**	1.349	0.320	3.728	0.000
Experience in dairy farming	-0.380**	0.119	-0.265	-3.189	0.002
Herd size	0.396**	0.129	0.250	3.067	0.003
Land holding	4.809*	1.890	0.212	2.545	0.013
Panchmahal district (R <sup>2</sup> = 10.80 %)					
(Constant)	44.758	3.419	--	13.089	0.000
Herd Size	0.595*	0.255	0.226	2.330	0.022
Extension contact	3.819*	1.762	0.210	2.168	0.033

\*p<0.05, \*\*p<0.01

The results are in agreement with Arora *et al.*, (2006) regarding level of education, Shyam Singh *et al.*, (2013) regarding land holding, social participation and family size, Durgga

(2009) regarding annual income and Khokhar (2008) regarding mass media exposure and herd size. However, the contradictory findings regarding attitude towards dairy farming and

experience in dairy farming have been reported by Sharma and Singh (2008) and Gamit *et al.*, (2015), respectively.

Among the profile of dairy farmers of Panchmahal district annual income, herd size, risk orientation, scientific orientation and extension contact had positive and significant ( $p < 0.05$ ) association with adoption of improved animal husbandry practices. The present results are in agreement with findings of Durgga (2009) regarding annual income, Khokhar (2008) regarding herd size, Rizwan *et al.*, (2015) regarding risk orientation and Gour (2002) regarding scientific orientation and extension contact.

The stepwise regression analysis was carried out taking adoption of improved animal husbandry practices as a dependent variable and 16 socio-personal profile characters of respondents as independent variables (Table 4). Out of sixteen characters, the amount of variation in adoption about animal husbandry practices of farmers in Kheda district was jointly contributed by independent variables to the extent of 38.20 %, where education, experience in dairy farming, herd size and land holding contributed significantly. In Panchmahal district, the independent variables contributed to the variation in adoption level to the extent of 10.80 %, where herd size and extension contacts contributed significantly. These results supported the findings of earlier researchers, wherein significant regression of education (Durga 2009), land holding (Shyam Singh *et al.*, 2013) and extension contact (Gour 2002) on adoption was observed. However, Letha Devi *et al.*, (2014) reported non-significant contribution of herd size.

From the present study, it can be concluded that still farmers of Panchmahal district were not adopting 45.00 % of improved animal husbandry practices, while the corresponding

value of non-adoption for Kheda district was 35.00 %. Thus, there is a need to make the farmers of Kheda and Panchmahal districts aware about importance of improved animal husbandry management practices through extension education programme and make available necessary essential veterinary services and other input facilities at their door step to improve their animals genetic makeup, health and productivity, and thereby improve their socio-economic condition and living standard.

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