

ADOPTION OF SCIENTIFIC DAIRY FARMING PRACTICES BY ATMA BENEFICIARY AND NON- BENEFICIARY DAIRY FARMERS

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ABSTRACT

A sample of 300 respondents were randomly selected from the Banaskantha, Sabarkantha and Patan district of North Gujarat State of India. Regarding water management practices, all the ATMA beneficiaries and non- beneficiary's dairy farmers had continuous adoption of 'reliable source for clean drinking water' and follow 'proper time of serving water'. In term of management practices, majority of beneficiaries and non- beneficiaries had continuous adoption of 'providing cheap but well ventilated, clean and comfortable house'. With regard to breeding practices, majority of ATMA beneficiaries and non- beneficiaries had continuously adoption of 'sign of estrus observation' and 'artificial insemination method uses'. Related to health management practices, large proportion of beneficiaries and non- beneficiaries' dairy farmers were found to have continuous adoption of 'timely treatment of weak and sick animal', ATMA beneficiaries and non- beneficiaries' dairy farmers have found significantly different in 'Practicing de-worming in calf for prevention of internal parasite' and 'maintain health record'. When we talk about clean milk production practices, majority of beneficiaries and non- beneficiaries had continuous adoption of 'keeping animal in clean and dry place'. A significant difference in beneficiaries and non- beneficiaries was found in continuous adoption of 'proper disposal mastitis milk', 'proper drying off milking animal' and in 'dry cow therapy.' Study revealed that good number of ATMA beneficiaries (60.66 per cent) and non- beneficiaries (56.66 per cent) was found to have adoption of ICT in terms of 'use of ICT application for money transaction' and significant different was found in the study ATMA beneficiaries and non- beneficiaries in 'use of mobile application for sale of animal.'

Keywords: adoption, dairy farmers, ATMA beneficiary

INTRODUCTION

India has been predominantly an agriculture-based economy and livestock is an important sub-component. Livestock sector has a high potential, especially in rural economy (Mahammad et al., 2022a; Mahammad et al., 2021). Compared to crop production, livestock sector is more stable, require lesser investment and has proved to be life saviour in distress situation. Dairy farming has been the most promising sector, keeping milch animals is part of agriculture; also, major source of income to the small, marginal and landless farmers that constitutes bulk of the rural population. Dairy farming helped in and continues to help in augmenting food supply, generating employment and raising nutritional level.

The ability of dairy farmers to generate more income from dairying largely depends on the effective adoption of improved scientific dairy farming practices that lead to increase in productivity but the farmers face various constraints in adoption of these practices. Constraints

identification will help the planners and administrators in identifying the problems so that the loopholes, if any can be definitely augmenting the profits. Keeping the above facts in view, the present investigation was undertaken to identify the adoption level of scientific dairy farming practices by ATMA beneficiary farmers & ATMA non- beneficiary dairy farmers.

OBJECTIVES

- (1) To study the socio-personal, socio-economic, communicational and psychological characteristics of ATMA beneficiary farmers & ATMA non- beneficiary farmers
- (2) To study the adoption level of scientific dairy farming practices by ATMA beneficiary farmers & ATMA non- beneficiary farmers

METHODOLOGY

The study was conducted three districts ATMA block viz., (Vadgam) Banaskantha, (Vadali) Sabarkantha and

(Siddhpur) Patan of North Gujarat region was purposively selected. On the basis of the list, five villages having more participants were selected purposively from each ATMA block. Ten beneficiary respondents from each village were randomly selected, thus making a list of 50 beneficiaries from each ATMA block. Total 150 ATMA beneficiaries were selected. To generate the comparison group, same villages were selected and from each village minimum ten ATMA non-beneficiary farmers were selected. Thus, making a group of total 150 ATMA non-beneficiary respondents. Thus, the ultimate sample size for the study comprised of 150 ATMA beneficiary dairy farmers and 150 ATMA non-beneficiary dairy farmers, so total 300 respondents were selected for this study.

A suitable interview schedule was developed for dairy farmers. All these selected variables were included in the schedule. The suitable indices were also developed for the measurement of variables. The interview schedules pre-tested on similar respondents in non-sample area to work out their reliability and validity. The suitable modification was made in the schedules accordingly. With the help of interview schedule, the data was collected from dairy farmers personally by the researcher at the convenient time. Some informal discussion pertaining to the study was carried out. After collection of information, the classification and tabulation of data was done keeping in view the objectives of the study. The suitable statistical analysis of data using SPSS-16.0 software such as mean, standard deviation, frequency and percentages were applied to draw meaningful inferences.

RESULTS AND DISCUSSION

Distribution of respondents according to their differential adoption of scientific dairy farming practices by ATMA beneficiaries and ATMA non beneficiaries' dairy farmers are presented in table 1. It shows that regarding feeding practices, majority of beneficiaries and non-beneficiaries had continuous adoption of 'providing feed and fodder as per requirement', 'providing feed and fodder in manger', 'chaff cutting of fodder (cutting 1-2inch piece) and 'supplementation of mineral mixture'. Relatively good number (38.00 per cent) of beneficiaries was found to have continuous adoption of 'proper method of hay making' as compared to (32.00 per cent) of non-beneficiaries. It further revealed that more per cent of beneficiaries adopted advance feeding practices like supplementation of bypass fat (24.66 per cent), supplementation of bypass protein (22.00 per cent), silage making (18.66 per cent), azolla production technology (11.33 per cent) and importance of hydroponics (07.33) than non-beneficiaries.

Regarding water management practices, all the ATMA beneficiaries and non-beneficiaries had continuous

adoption of 'reliable source for clean drinking water' and follow 'proper time of serving water'. Majority of ATMA beneficiaries had continuous adoption of 'Giving water even at night' (97.33 per cent) and 'Provide clean drinking water adlib for 24 hours (98.00 per cent).

In term of management practices, majority of beneficiaries and non-beneficiaries had continuous adoption of 'providing cheap but well ventilated, clean and comfortable house', 'cleaning shed or house twice daily', 'proper disposal of dung, urine and foliage', 'disinfection of shed at regular interval (Dusting, spraying and fumigation) and 'feeding concentrate at time of milking'. ATMA beneficiaries and non-beneficiaries were found significantly different in adoption of 'providing pucca manger in the house itself', 'proper drainage system in the house', 'completing milking in 6-7 minutes', 'proper method of manure pit preparation', 'maintain animal in semi-intensive loose housing system' and 'maintain dairy farm record' indicating more number of ATMA beneficiaries had adoption of these management practices than ATMA non beneficiaries.

With regard to breeding practices, majority of ATMA beneficiaries and non-beneficiaries had continuously adoption of 'sign of estrus observation', 'artificial insemination method uses', 'proper time of insemination checking', 'proper time of pregnancy diagnosis' and 'gestation period of cow and buffalo'. Significant differences were found in beneficiaries and non-beneficiaries for 'timely treatment of anoestrous and repeat breeding cow and buffalo', 'every day watching cow and buffalo for estrous', 'keeping record of breeding' and 'maintain inter calving period'.

Related to health management practices, large proportion of beneficiaries and non-beneficiaries were found to have continuous adoption of 'timely treatment of weak and sick animal', 'first aid for common disease like Tympany, Acidosis, Indigestion, etc.', 'isolation of weak and sick animals', 'identification of weak and sick animals', 'vaccination of animal for FMD, HS, BQ, Brucellosis and LSD etc.', 'de-worming in milking animal' and 'tick control'. Beneficiaries and non-beneficiaries have found significantly different in 'Practicing de-worming in calf for prevention of internal parasite' and 'maintain health record'.

When we talk about clean milk production practices, majority of beneficiaries and non-beneficiaries had continuous adoption of 'keeping animal in clean and dry place', 'timely treatment for mastitis' and 'washing udder with Luke warm water or antiseptic solution before milking. A significant difference in beneficiaries and non-beneficiaries was found in continuous adoption of 'proper disposal mastitic milk', 'proper drying off milking animal' and in 'dry cow therapy.'

Table 1: Respondents according to adoption of scientific dairy farming practices

(n = 300)

Sr. No.	Items	Beneficiaries (n = 150)	Non-Beneficiaries (n = 150)	Pooled (n = 300)	Total mean score	Rank
1	Requirement of feed and fodder	150 (100.00)	146 (97.33)	296 (98.66)	0.98	I
2	Providing feed and fodder in Manger	146 (97.33)	134 (89.33)	280 (93.33)	0.93	II
3	Chaff cutting of fodder (cutting 1-2 inch piece)	133 (88.66)	129 (86.00)	262 (87.33)	0.87	III
4	Supplementation of mineral mixture	109 (72.66)	111 (74.00)	220 (73.33)	0.73	IV
5	Supplementation of salt	89 (59.33)	90 (60.33)	179 (59.66)	0.59	V
6	Proper method of hay making	57 (38.00)	48 (32.00)	105 (35.00)	0.35	VI
7	Supplementation of bypass fat	37 (24.66)	32 (21.33)	69 (23.00)	0.23	VII
8	Supplementation of bypass protein	33 (22.00)	26 (17.33)	59 (19.66)	0.19	VIII
9	Azolla production technology	17 (11.33)	12 (08.00)	29 (09.66)	0.09	X
10	Silage making	28 (18.66)	19 (12.66)	47 (15.66)	0.15	IX
11	Importance of Hydroponics	11 (07.33)	07 (04.66)	18 (06.00)	0.06	XI
Water Management						
1	Reliable source clean drinking water	147 (98.00)	141 (94.00)	288 (96.00)	0.96	I
2	Proper time of serving water	147 (98.00)	139 (92.66)	286 (95.33)	0.95	II
3	Giving water even at night	146 (97.33)	128 (85.33)	274 (91.33)	0.91	III
4	Provide clean drinking water adlib for 24 hours	147 (98.00)	97 (64.66)	244 (81.33)	0.81	IV
	Mean	09.31	08.39			
Management Practice						
1	Providing cheap but well ventilated, clean and comfortable house	132 (88.00)	127 (84.66)	259 (86.33)	0.86	I
2	Cleaning shed or house twice daily	124 (82.66)	114 (76.00)	238 (79.00)	0.79	II
3	Providing pucca manger in the house itself	117 (78.00)	88 (58.66)	205 (68.33)	0.68	VI
4	Disinfection of shed at regular interval (Dusting, spraying and fumigation)	109 (72.66)	111 (74.00)	220 (73.33)	0.73	IV
5	Proper drainage system in the house	106 (70.66)	92 (61.33)	198 (66.00)	0.66	VII
6	Proper disposal of dung, urine and foliage	115 (76.66)	110 (73.33)	225 (75.00)	0.75	III
7	Proper method of manure pit preparation	106 (70.66)	70 (46.66)	176 (58.66)	0.58	IX
8	Grooming, its advantage	86 (57.33)	59 (39.33)	145 (48.33)	0.48	X
9	Summer management: arrangement of foggers or other means of control temperature	79 (52.66)	63 (42.00)	142 (47.33)	0.47	XI
10	Milking animal at regular interval	74 (49.33)	70 (46.66)	144 (48.00)	0.48	X
11	Not beating and freighting the animals during milking	81 (54.00)	46 (30.66)	127 (42.33)	0.42	XIII
12	Feeding concentrate at time of milking	112 (74.66)	95 (63.33)	207 (69.00)	0.69	V
13	Completing milking in 6-7 minutes	97 (64.66)	85 (56.66)	182 (60.66)	0.60	VIII
14	Maintain animal in semi-intensive loose housing system	61 (40.66)	36 (24.00)	97 (32.33)	0.32	XIV
15	Maintain dairy farm record	79 (52.66)	58 (38.66)	137 (45.66)	0.45	XII
16	Biogas plant installation	58 (38.66)	31 (20.66)	89 (29.66)	0.29	XV
	Mean	10.24	08.36			
Breeding Practices						
1	Sign of estrus observation	142 (94.66)	141 (94.00)	283 (94.33)	0.94	I

Sr. No.	Items	Beneficiaries (n = 150)	Non-Beneficiaries (n = 150)	Pooled (n = 300)	Total mean score	Rank
2	Artificial insemination method uses	141 (94.00)	136 (90.66)	277 (92.33)	0.92	II
3	Sex-sorted semen use	29 (19.33)	26 (17.33)	55 (18.33)	0.18	X
4	Proper time of insemination checking	141 (94.00)	136 (90.66)	277 (92.33)	0.92	II
5	Length of estrus cycle	96 (64.00)	98 (65.33)	194 (64.66)	0.64	VII
6	Estrus synchronization of animals	01 (00.66)	00 (00.00)	01 (00.33)	0.003	XI
7	Ideal dry period	115 (76.66)	118 (78.66)	233 (77.66)	0.77	V
8	Inter calving period	105 (70.00)	98 (65.33)	203(67.66)	0.67	VI
9	Lactation length	121 (80.66)	116 (77.33)	237(79.00)	0.79	IV
10	Proper time of pregnancy diagnosis	124 (82.66)	122 (81.33)	246(82.00)	0.82	III
11	Gestation period of cow and buffalo	125 (83.33)	121 (80.66)	246(82.00)	0.82	III
12	Timely treatment of anestrus and repeat breeding cow and buffalo	122 (81.33)	117 (78.00)	239(79.66)	0.79	VI
13	Every day watching cow and buffalo estrous	99 (66.00)	81 (54.00)	180(60.00)	0.60	VIII
14	Multiple ovulation Embryo transfer technology (MOETT)	00 (00.00)	00 (00.00)	00 (00.00)	0.00	XII
15	Keeping record of breeding	82 (54.66)	66 (44.00)	148(49.33)	0.49	IX
	Mean	19.11	18.22			
Health Management						
1	Identification of weak and sick animals	132 (88.00)	118 (78.66)	250(83.33)	0.83	II
2	Isolation of weak and sick animals	124 (82.66)	127 (84.66)	251(83.66)	0.83	II
3	First aid for common disease like Tympany, Acidosis, Indigestion, etc.	136 (90.66)	128 (85.33)	264(88.00)	0.88	I
4	Timely treatment of weak and sick animal	138 (92.00)	127 (84.66)	265(88.33)	0.88	I
5	Vaccination Of Animal For FMD, HS, BQ, Brucellosis, LSD etc.	128 (85.33)	122 (81.33)	250(83.33)	0.83	II
6	Practicing de-worming in calf for prevention of internal parasite	91 (60.66)	76 (50.66)	167(55.66)	0.55	V
7	De-worming in milking animal	118 (78.66)	112 (74.66)	230(76.66)	0.76	III
8	Tick control	122 (81.33)	103 (68.66)	225(75.00)	0.75	IV
9	Maintain Health Record	86 (57.33)	70 (46.66)	156(52.00)	0.52	VI
	Mean	07.16	06.55			
Clean Milk Production						
1	Keeping animal in clean and dry place	130 (86.66)	132 (88.00)	262(87.33)	0.87	I
2	Washing udder with lukewarm water or antiseptic solution before milking	121 (80.66)	104 (69.33)	225(75.00)	0.75	III
3	Testing milk for sub-clinical mastitis	89 (59.33)	86 (57.33)	175(58.33)	0.58	VII
4	Timely treatment for mastitis	125 (83.33)	119 (79.33)	244(81.33)	0.81	II
5	Proper disposal mastitis milk	109 (72.66)	103 (68.66)	212(70.66)	0.70	IV
6	Proper drying off milking animal	101 (67.33)	104 (69.33)	205(68.33)	0.68	V
7	Transfer of milk to refrigeration immediate after milking	93 (62.00)	91 (60.66)	184(61.33)	0.61	VI
8	Keeping milk utensil clean and hygienic condition	111 (74.00)	93 (62.00)	204(68.00)	0.68	V
9	Dry cow therapy	93 (62.00)	78 (52.00)	171(57.00)	0.57	VIII
	Mean	06.48	06.06			

Sr. No.	Items	Beneficiaries (n = 150)	Non-Beneficiaries (n = 150)	Pooled (n = 300)	Total mean score	Rank
ICT Use						
1	Use of application for money transaction	91 (60.66)	85 (56.66)	176(58.66)	0.58	I
2	Use of mobile application for marketing of milk and by-products	34 (22.66)	18 (12.00)	52 (17.33)	0.17	II
3	Use of mobile base application for animal monitor	17 (11.33)	10 (06.66)	27 (09.00)	0.09	IV
4	Use of mobile application for sale of animal	23 (15.33)	08 (05.33)	31 (10.33)	0.10	III
5	Use of Artificial intelligence in dairy farming	05 (03.33)	00 (00.00)	05 (01.66)	0.01	VI
6	Use of computer for record keeping	16 (10.66)	07 (04.66)	23 (07.66)	0.07	V
	Mean	1.24	0.86			

Figure in parentheses express in percentage.

Table 1 revealed that good number of beneficiaries (60.66 per cent) and non- beneficiaries (56.66 per cent) was found to have adoption of ICT in terms of ‘use of ICT application for money transaction’ and ‘use of mobile application for marketing of milk and by-products’. Significant different was found in beneficiaries and non-beneficiaries in ‘use of mobile application for sale of animal.’

Mean value of different management practices depicted in table 1 indicated that component-wise adoption of scientific dairy farming practices was considerably higher in ATMA beneficiary’s dairy farmers compared to ATMA

non-beneficiary’s dairy farmers indicating that the impact of ATMA training they have received. The findings are in line with the study of Parmar *et al.*, 2024; Chaudhary *et al.*, 2024; Mahammad *et al.*, 2022a; Mahammad *et al.*, 2021.

Adoption level about overall scientific dairy farming practices

Result shown in table 2 and Figure 1 revealed that majority (74.33 per cent) of ATMA beneficiaries and non- beneficiary’s dairy farmers had medium level of adoption of scientific dairy farming practices, followed by high (13.00 per cent) and low (12.66 per cent) level.

Table 2: Respondents according to level of adoption about scientific dairy farming

(n=300)

Sr. No.	Category	Beneficiaries (n = 150)	Non-Beneficiaries (n = 150)	Pooled (n = 300)	Mann Whitney ‘U’ test	‘Z’ value
1	Low (Mean–S.D.)	21 (14.00)	17 (11.33)	38 (12.66)	8936	3.0795**
2	Medium (Mean–S.D.)	112 (74.66)	111 (74.00)	223 (74.33)		
3	High (Mean–S.D.)	17 (11.33)	22 (14.66)	39 (13.00)		
	Mean ± S.D.	49.88 ± 7.14	47.96 ± 7.74	48.92 ± 7.50		

Figure in parentheses express in percentage.

** ‘z’ value is significant at the 0.01 level. * ‘z’ value is significant at the 0.05 level.

The analysis of ‘Z’ value had showed highly significant difference between beneficiaries and non-beneficiaries. Mean of beneficiaries and non- beneficiaries also had significance difference in adoption of scientific dairy farming practices. Through training the participants definitely would have improved upon in their knowledge regarding

scientific dairy farming. Knowledge influences interest and understanding, it widens the mirage and develops foresight of an individual. Exposure to latest technical expertise enables to arrive at a favourable conclusion regarding adoption. Thus, knowledge fortifies aspiration to adopt. The findings are in line with the study of Parmar *et al.*, 2024; Chaudhary

et al., 2024; Patel and Patel, 2024; Naik et al., 2024; Swami et al., 2024; Pandey et al., 2023; Mahammad et al., 2022a; Mahammad et al., 2022a; Mahammad et al., 2021.

CONCLUSION

From the above study it is concluded mean value of different management practices indicate that component-wise adoption of scientific dairy farming practices was considerably higher in ATMA beneficiary compared to ATMA non-beneficiary dairy farmers indicating that the impact of ATMA training they have received.

Adoption level about overall scientific dairy farming practices concerned, majority (74.33 per cent) of ATMA beneficiary and non-beneficiary dairy farmers had medium level of adoption of scientific dairy farming practices. The analysis of 'Z' value had showed highly significant difference between ATMA beneficiary and non-beneficiary farmers. Mean of ATMA beneficiary and non-beneficiary farmers also had significance difference in adoption of scientific dairy farming practices.

RECOMMENDATION

ATMA should have organised more training programmes and trained to dairy farmers in various aspects.

ACKNOWLEDGEMENT

The authors are thankful to Director Research, Kamdhenu University, Gujarat for providing necessary facilities for conducting the study.

CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

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Received : March 2025 : Accepted : May 2025