



Extent of Adoption of Improved Animal Husbandry Practices by Dairy Farmers of Morar Block in Gwalior District

Nemi Chand Meena^{1*}, S. K. Badodiya² and Kamni Paia Biam¹

¹Swami Keshwanand Rajasthan Agriculture University, Bikaner, India.

²Krishi Vigyan Kendra (KVK), Talun, Badwani, Rajmata Vijayaraje Scindia Krishi Vishwavidyalaya, Madhya Pradesh, India.

Authors' contributions

This work was carried out in collaboration between all authors. Author NCM under the guidance of author SKB designed the study, performed the statistical analysis, wrote the protocol and the first draft of the manuscript. Authors NCM and KPB managed the analyses and the literature searches of the study. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2017/32985

Editor(s):

(1) Ian McFarlane, School of Agriculture Policy and Development, University of Reading, UK.

Reviewers:

(1) S. Senthilkumar, Veterinary College and Research Institute, Tamil Nadu, India.

(2) Hilal Yilmaz, Eastern Mediterranean Agricultural Research Institute, Adana, Turkey.

Complete Peer review History: <http://www.sciencedomain.org/review-history/18731>

Original Research Article

Received 26th March 2017
Accepted 14th April 2017
Published 21st April 2017

ABSTRACT

Recent advances in animal husbandry technologies have demonstrated potential for maximization of milk productivity and all these requires adoption of improved technologies. The present study was conducted to assess the extent of adoption of improved animal husbandry practices by dairy farmers of Morar Block in Gwalior district of Madhya Pradesh. Simple random sampling method was used to select 120 dairy farmers as respondents. The findings revealed that reproductive practices like artificial insemination at proper time of heat with semen of good bull was regularly adopted by 80.00 per cent of the dairy farmers, regarding nutritional practices provision of ad libitum clean and fresh water was regularly adopted by 85.00 per cent of dairy farmers, washing of hands and udder before milking was the management practices regularly adopted by 96.67 per cent of the farmers.

*Corresponding author: E-mail: nmeena2010@gmail.com;
Communication id: kamnipaia@gmail.com;

To control disease, prompt reporting of outbreak of a contagious disease to the local veterinarian was adopted by 76.67 per cent of the dairy farmers. Marketing practice like obtaining loans from nationalised banks instead of private money lender to purchase inputs for dairy farming was continuously adopted by 63.34 per cent of the farmers. The final study reveals that 58.33 per cent of the respondents had medium level of adoption of improved animal husbandry practices.

Keywords: Adoption; animal husbandry; practices; dairy farmers.

1. INTRODUCTION

India with a production of 155.5 million tonnes of milk in 2015-16 is the leading country in the world in terms of total milk production contributing about 18.50 per cent of the world's milk production [1]. The demand of milk and milk products in India is projected to increase to 142.9 million tonnes in 2015 and further to 191.3 million in 2020 [2]. The recent advances in animal husbandry technologies have demonstrated potential for maximization of milk productivity. However, expected number of the farmer still does not fully adopt animal husbandry related innovations.

The livestock sector alone contributes nearly 25.6 per cent of Value of Output at current prices of total value of output in Agriculture, Fishing & Forestry sector. The overall contribution of Livestock Sector in total GDP is nearly 4.11% at current prices during 2012-13 [3]. India occupies first position in the milk production. During 1998-99, the total milk production in the country was 78 million tonnes; however, average milk production in the country is lower as compared to many other countries of the world [4]. However with time production has increased and now India's milk production alone accounts for 18.5 per cent of world production, achieving an annual output of 146.3 million tonnes during 2014-15 as compared to 137.69 million tonnes during 2013-14 recording a growth of 6.26 per cent. Whereas, the Food and Agriculture Organization (FAO) has reported a 3.1 per cent increase in world milk production from 765 million tonnes in 2013 to 789 million tonnes in 2014. The per capita availability of milk in India has increased from 176 grams per day in 1990-91 to 322 grams per day by 2014-15. It is more than the world average of 294 grams per day during 2013 [5]. This represents a sustained growth in availability of milk and milk products for the growing population. Dairying has become an important secondary source of income for millions of rural households engaged in agriculture. Hence, we should plan for sustaining high milk

production as well as increasing productivity of animals.

Animal husbandry services in our country rendered by number of Government and Non-government organizations through their extension workers at national, state, district, block and village levels through various livestock development programmes and projects which help dairy farmers to adopt the animal husbandry practices. In rural areas of Gwalior district, the agricultural production and animal husbandry are mainly in the hands of the farming community, who maintain one or two dairy animals under two-tier production system and maintain them on the by-products of the agricultural produces. Due to limited resources available with the farming community, expected improvement is yet to achieve by them in the milk production per animal. The availability of latest scientific knowledge and information has not yet help achieve an expected level of adoption of improved animal husbandry practices. Keeping this in mind the study was conducted with the objective to study the "Extent of adoption of improved animal husbandry practices by dairy farmers" of Morar Block in Gwalior district.

2. METHODOLOGY

The study was conducted in Morar Block of Gwalior district in the state of Madhya Pradesh, India due to maximum dairy farmers in the block. The selected block comprises of 176 villages. A list of villages where animal husbandry practices are being operated by the farmers was prepared with help of extension officials. Out of which, 10 villages were selected randomly by using the sampling method for the study. After the selection of the villages, a village wise list of dairy farmers was prepared and 12 dairy farmers from each village were randomly selected with the help of simple random sampling methods. Thus, the total sample consisted of 120 dairy farmers as respondents. The extent of adoption of major animal husbandry practices was measured in terms of reproductive, nutritional,

management, disease control and marketing practices followed by the respondents. Data was collected by an interview schedule developed during the study. The respondents were asked to give opinion about the use of improved animal husbandry practices (adoption) on three point continuum viz; regular adoption, sometime adoption and no adoption and scores of 2, 1 and 0 were assigned, respectively. Extent of adoption was calculated on the basis of these scores. The adoption score obtained by individual respondent was converted into adoption index [6] as below:

$$\text{Adoption Index} = (\text{Sum of the adoption scores obtained by respondent} / \text{Sum of obtainable adoption score}) \times 100$$

The categorization was based on the mean. The following categories were used in the study.

Category
Low (<Mean – SD)
Medium (Mean ± SD)
High (>Mean + SD)

3. RESULTS AND DISCUSSION

3.1 Profile of Dairy Farmers

3.1.1 Age

The data presented in Table 1 reveals that majority (55.83%) of the respondents were found in the middle age group followed by young age group (27.50%) and old age group (16.67%). Almost similar findings were also reported by [7].

Table 1. Distribution of respondents according to their age (N=120)

Sl. no.	Categories	Frequency	Percentage
1.	Young	33	27.50
2.	Middle	67	55.83
3.	Old	20	16.67

3.1.2 Education

The data displayed in Table 2 indicate that most of the respondents (37.50%) were educated up to middle school level, followed by primary educated (33.33%) and 11.67 per cent reported to have passed high school. It was also observed that highly educated and illiterate respondents were very low i.e. only 09.17 per cent and 8.33 per cent, respectively.

Table 2. Distribution of respondents according to their education level (N=120)

Sl. no.	Categories	Frequency	Percentage
1.	Illiterate	10	08.33
2.	Primary school	40	33.33
3.	Middle school	45	37.50
4.	High School	14	11.67
5.	Above high school	11	09.17

3.1.3 Family size

The data in Table 3 showed that the higher percentage (40.83%) of the respondents had medium family size, 31.67 per cent respondents were in the large category and 27.50 per cent were in the small category. The finding is in accordance with the findings of [8].

Table 3. Distribution of respondents according to their family size (N=120)

Sl. no.	Categories	Frequency	Percentage
1.	Small (up to 4 members)	33	27.50
2.	Medium (5-6 member)	49	40.83
3.	Large (> 6 members)	38	31.67

3.1.4 Annual income

The data presented in Table 4 indicated that maximum of the respondents (52.50%) belonged to medium income group, followed by low income group (30.00%) and high income groups were 17.50 per cent respectively.

3.1.5 Extension participation

The data in Table 5 shows that out of the total 120 respondents, 42.50 per cent had medium extension participation, followed by 31.70 per cent respondents had high extension participation and only 25.80 per cent were found to have low extension participation.

3.1.6 Herd size/ Animal possession

It is seen from the data of Table 6 that nearly two fifth (51.67%) of the dairy farmers had medium herd size, followed by 36.67 per cent with small and 11.66 per cent with large herd size. It can be concluded that majority (88.34%) of the dairy

farmers had small to medium herd size. The probable reason might be that respondents were not fully dependent only on dairying; means majority of them had adopted animal husbandry occupation as subsidiary occupation in addition to agriculture. In such a situation, they might have preferred to have a low to medium size of herd to justify both animal husbandry and agricultural occupations. The results of [9,10,11,12] were in conformity with this finding.

Table 4. Distribution of respondents according to their annual income (N=120)

Sl. no.	Categories	Frequency	Percentage
1.	Low (<1.19 score)	36	30.00
2.	Medium (1.19 to 2.55 score)	63	52.50
3.	High (>2.55 score)	21	17.50
Mean (\bar{x}) = 1.87		SD = 0.68	

3.2 Extent of Adoption of Improved Animal Husbandry Practices

3.2.1 Reproduction practices

Table 7 reveals that reproduction practices like artificial insemination in dairy animals at proper time of heat with semen of good bull were adopted continuously by 80.00 per cent of the farmers. Diagnosis of pregnancy of dairy animal between 60 and 90 days after service and proper treatment to the animals through veterinarian for repeat breeders, metritis, endometritis and anoestrus was adopted by 67.50 and 73.33 per cent of the dairy farmers, respectively. Present research finding point toward that majority (80.00%) of the dairy farmers had adopted artificial insemination in their dairy animals. This finding is in line with [13,14,12].

3.2.2 Nutritional practices

The findings in Table 8 reveals that in case of nutritional practices like feeding of colostrums to

newborn calves within half an hour of birth, feeding of chopped fodders and balanced concentrate mixture with supplementation of mineral mixture on the basis of milk production, ad libitum clean and fresh water to animals and high yielding varieties (HYV) of fodder seeds were adopted continuously by 78.33, 68.33, 85.00 and 51.67 per cent of the dairy farmers, respectively. This finding is in line with [14] and [15].

3.2.3 Management practices

The Table 9 reveals that continuous adoption was observed in majority of the dairy farmers. Management practices like washing of hands and udder before milking, maintenance of cleanliness, comfort and ventilation in animal houses or sheds, use of sterilized scissors/knife for cutting of naval cord and application of tincture iodine on the naval cord and full hand method of milking were adopted continuously by 96.67, 90.83, 62.50 and 81.67 per cent of dairy farmers. Similar findings of higher level of adoption of milking practice (67.85%) was reported by [14], while 51.00 per cent for milking, 57.00 per cent for housing and 60.00 per cent for management, was observed by [15].

3.2.4 Disease control practices

From the data presented in Table 10 it reveals that disease control practices viz. timely and regular vaccination against common contagious diseases such as Food and Mouth Disease (FMD) and Haemorrhagic septicaemia (HS)/Black Quarter (BQ), prompt reporting of outbreak of contagious disease to the local veterinarian and timely treatment of sick animals by veterinary doctor were adopted continuously by 75.00, 76.67 and 74.17 per cent of the dairy farmer. At the same time it is also striking to note that important disease control practice like keeping sick animals in isolation from the healthy animals was not at all adopted by majority (55.00%) of the dairy farmers. The present finding is supported by [14] and [12].

Table 5. Distribution of respondents according to their extension participation (N=120)

Sl. no.	Categories	Frequency	Percentage
1.	Low (<1.29 score)	31	25.80
2.	Medium (1.29 to 2.81 score)	51	42.50
3.	High (>2.81 score)	38	31.70
Mean (\bar{x}) = 2.05		SD = 0.76	

Table 6. Distribution of respondents according to their animal possession (N=120)

Sl. no.	Categories	Frequency	Percentage
1.	Small (<4animals)	44	36.67
2.	Medium (5 to 6 animals)	62	51.67
3.	Large (>6 animals)	14	11.66
Mean (\bar{x}) = 5.04		SD = 1.34	

Table 7. Distribution of the dairy farmers according to extent of adoption regarding reproduction practices (N=120)

Sl. no.	Practices	RA	SA	NA
1	Artificial Insemination done at proper time of heat with semen of good bull	96 (80.00)	11 (09.17)	13 (10.83)
2	Having pregnancy diagnosis done between 60 to 90 days after service	81 (67.50)	15 (12.50)	24 (20.00)
3	Treatment of repeat breeders, metritis, endometritis and anoestrus cases by a veterinarian	88 (73.33)	13 (10.83)	19 (15.83)

Figures in parenthesis indicate percentage

RA-Regular adoption, SA- Sometime adoption, NA- No adoption

Table 8. Distribution of the dairy farmers according to extent of adoption regarding nutritional practices (N=120)

Sl. no.	Practices	RA	SA	NA
1	Feeding of colostrums to newborn calves within half an hour of birth	94 (78.33)	11 (09.17)	15 (12.50)
2	Feeding of chopped fodders and balanced concentrate mixture with supplementation of mineral mixture on the basis of milk production	82 (68.33)	20 (16.67)	18 (15.00)
3	Provision of ad libitum clean and fresh water to animals	102 (85.00)	12 (10.00)	06 (05.00)
4	Use of High Yielding Variety of fodder seeds	62 (51.67)	22 (18.33)	36 (30.00)

Figures in parenthesis indicate percentage

RA-Regular adoption, SA- Sometime adoption, NA- No adoption

Table 9. Distribution of the dairy farmers according to extent of adoption regarding management practices (N=120)

Sl. no.	Practices	RA	SA	NA
1	Washing of hands and udder before milking	114 (96.67)	3 (02.50)	1 (00.83)
2	Maintenance of cleanliness during milking and comfort in animal houses/sheds (cleaning of manger and removal of dung daily) and good ventilation	109 (90.83)	4 (03.33)	7 (05.83)
3	Use of sterilized scissors/knife for cutting naval cord and application of tincture iodine on the naval cord/painting of naval cord	75 (62.50)	25 (20.83)	20 (16.67)
4	Full hand method of milking	98 (81.67)	13 (10.83)	09 (07.50)

Figures in parenthesis indicate percentage

RA-Regular adoption, SA- Sometime adoption, NA- No adoption

Table 10. Distribution of the dairy farmers according to extent of adoption regarding disease control practices (N=120)

Sl. no.	Practices	RA	SA	NA
1	Timely and regular vaccination against common contagious diseases, such as FMD and HS/BQ	90 (75.00)	16 (13.33)	14 (11.67)
2	Prompt reporting of outbreak of a contagious disease to the local veterinarian	92 (76.67)	18 (15.00)	10 (08.33)
3	Timely treatment of sick animals by veterinary doctor	89 (74.17)	19 (15.33)	12 (10.00)
4	Isolation of sick animals from the healthy ones in a separate house/shed/ place	54 (45.00)	0 (0.00)	66 (55.00)

Figures in parenthesis indicate percentage

RA-Regular adoption, SA- Sometime adoption, NA- No adoption

Table 11. Distribution of the dairy farmers according to extent of adoption regarding marketing practices (N=120)

Sl. no.	Practices	RA	SA	NA
1	Purchasing animals from reliable source, after done scoring / weightage on production	50 (41.67)	24 (20.00)	46 (38.33)
2	Purchasing animals after veterinary check up	42 (35.00)	20 (16.67)	58 (48.33)
3	Obtaining loans from nationalized banks instead of village money lender	76 (63.34)	10 (08.33)	34 (28.33)
4	Sale of animals with necessary record of milk production, parity, service period and vaccination etc.	60 (50.00)	11 (09.17)	49 (40.83)

Figures in parenthesis indicate percentage

RA-Regular adoption, SA- Sometime adoption, NA- No adoption

Table 12. Distribution of the dairy farmers according to their overall adoption regarding improved animal husbandry practices (N=120)

Sl. no.	Categories	Frequency	Percentage
1.	Low (< 3.63 score)	18	15.00
2.	Medium (between 3.63 to 6.21 score)	70	58.33
3.	High (> 6.21 score)	32	26.67
Mean (\bar{x}) = 4.92,		SD = 1.29	

3.2.5 Marketing practices

Marketing practices are also as important, as other practices of animal husbandry. But some of the marketing practice like purchasing of animals from reliable sources after following scientific method of scoring/weightage on production was adopted by (41.67%) of the dairy farmer as

revealed in Table 11. While, nearly half (48.33%) of them were not adopted proper purchasing procedure of animals after veterinary check-up. Other important practices viz. obtaining loans from nationalised banks instead of private money lender to purchase inputs for dairy farming was continuously adopted by (63.34%) of the dairy farmers and half (50.00%) of them were continuously adopting systematic procedure of selling of animals with necessary records of milk production, parity, service period and vaccination. This finding is in conformity with this result of [12].

3.2.6 Level of overall adoption regarding improved animal husbandry practices

Table 12 shows that majority (58.33%) of the respondents had medium level of adoption of improved animal husbandry practices while, 26.67 per cent percentage of respondents were found to have high level of adoption of improved animal husbandry practices and only 15.00 per

cent percentage of respondents were found to have low level of adoption of improved animal husbandry. The finding is in agreement with findings of [16,12,4].

4. CONCLUSION

From the study it can be concluded that slightly more than half (58.33%) of the milk producer had medium level of adoption of improved animal husbandry practices. The probable reasons for above finding might be due to the economic condition and staffing of positivism in terms of change agency contact, scientific orientation, risk orientation, knowledge and Information and Communication Tools (ICT) exposure up to desired level.

Based on the findings and observations, the following recommendations are made for better adoption of improved animal husbandry practices by the farmers:

- i. Exposure visits, demonstrations as well as by providing on campus training programmes on improved animal husbandry practices to dairy farmers motivate them to adopt improved animal husbandry practices.
- ii. ICT exposure or awareness on use of various ICT tools such as web portals, mobile internet, mobile consultancy services, community telecentres, etc. for easy asses to good quality animal husbandry practices for rearing of dairy animals.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. State of Indian Agriculture (2015-16). Government of India Ministry of Agriculture & Farmers Welfare Department of Agriculture, Cooperation & Farmers Welfare Directorate of Economics.
2. Press Information Bureau, Govt of India; 2016.
Available:<http://pib.nic.in/newsite/PrintRelease.aspx?relid=136849>
(Accessed on 1/03/2016)
3. 19th Livestock Census-2012 All India Report. Ministry of Agriculture Department

- of Animal Husbandry, Dairying and Fisheries Krishi Bhawan, New Delhi.
4. Patel KS. Current scenario of dairy animal production in the country. Paper presented in seminar on "Recent Advances in Animal Production" held at GVC, G.A.U., Anand. 2000;1-6.
5. Economic Survey 2015-16.
Available:<http://www.news18.com/news/business/economic-survey-2015-16-india-ranks-first-in-milk-production-accounting-for-18-5-per-cent-of-world-production-1208209.html>
(Accessed on 7/04/2017)
6. Shinde VG, Sangle GK, Dikle RN. Adoption of improved dairy practices by dairy farmers. Maha. J. Extn. Edn. 1998;17:144-151.
7. Patel HN. Impact of extension education and developmental programmes of animal production. Proc. Nat. Symp. Indian Soc. of Livestock Production and Management, Veterinary College, Anand. 1994;229-231.
8. Nayak HS, Bajaj SS, Raut DR. Problem of dairy farmers in Ahmednagar district of Maharashtra. Maha. J. Extn. Edn. 1986;5: 107-110.
9. Lad MD. Impact of Vasudhara dairy on milk producers of Valsad district in relation to improved animal husbandry practices. M.Sc. (Agri.) Thesis, (Unpublished) G.A.U., S. K. Nagar; 1991.
10. Thombre BM, Pawar BR. Profile study of crossbred cattle owners in Marathwada. Maharashtra J. of Extn. Edn. 1993;12:369-372.
11. Temkar, Gurudatta K. A study on extent of knowledge and attitude towards artificial insemination in the dairy animals of the dairy farmers of Anand district. M.Sc. (Agri.) Ext. Edu. Thesis (Unpublished). G.A.U., GAU; 2000.
12. Gour AK. Factors influencing adoption of some improved animal husbandry practices of dairying in Anand and Vadodara districts of Gujarat State. Ph.D. Thesis (Unpublished). G.A.U., S. K. Nagar; 2002.
13. Ingole NP, Saigaonkar PB, Kothekar MD. Adoption of improved animal husbandry practices by owners of crossbred cattle under ICDP. Indian Journal of Extension Education. 1988;24(3&4):59-61.
14. Yadav BL, Yadav MC. Multiple regression equations for determination of partial

- contribution of various buffalo husbandry practices scores on total practices scores. Proc. Symp. Indian Soc. of Livestock Production and Management, Veterinary College, Anand. 1994;100.
15. Patel JG. Indigenous resources management by tribal farm women in Vadodara district of Gujarat State. M.Sc. (Agri.) Thesis, (Unpublished). GAU, S. K. Nagar; 1998.
16. Rakshe PT, Kadam IP, Patil DR. Study of the dairy farmers knowledge and adoption level of improved animal husbandry and dairy management practices for buffaloes. Indian J. Anim. Prod. Mgmt. 1998;14(1):16-17.

© 2017 Meena et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

*The peer review history for this paper can be accessed here:
<http://sciencedomain.org/review-history/18731>*