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Study on the knowledge level and Adoption index of dairy farmers about improved dairy farming practices in West Bengal, India

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Abstract

India's rural economy depends heavily on dairy farming, especially for small and marginal farmers. This study evaluates the knowledge and adoption of improved dairy farming practices among dairy farmers in Murshidabad district, West Bengal. A total of 120 farmers from Burwan and Khargram blocks were selected through a random sampling method. Data were collected via structured interviews, and statistical analysis was conducted using SPSS 21.0. Findings revealed that farmers' knowledge levels were significantly associated with factors such as income, herd size, material possession, and access to mass media. Additionally, adoption of improved dairy practices was strongly influenced by monthly dairy income and herd size. Socio-demographic factors—including landholding, education, gender, and age played a crucial role in shaping both knowledge levels and adoption behaviors. Notably, younger farmers, males, and those with higher education exhibited a greater inclination toward adopting modern dairy practices. The study highlights the necessity for well-structured extension programs aimed at bridging knowledge gaps and promoting the adoption of scientific dairy farming techniques. Enhancing infrastructure and strengthening extension services are vital for improving dairy productivity and economic returns in the region.

Keywords: Knowledge, adoption index, dairy, farming, farmers etc.

1. Introduction

Livestock is an important source of income for a nation. The livestock sectors are playing crucial role for the rural economy especially for the small and marginal farmers. They not only contribute to their income but also their best insurance against any natural calamity. Animal husbandry is an integral component of Indian agriculture supporting livelihood of more than two third of the rural population. Dairy farming is one of the important activities of the rural population of our country. The importance of the dairy, as a subsidiary industry to agriculture has been stressed by the National Commission on Agriculture. Dairy is an instrument of changing the life style of rural households. It provides to rural people employment throughout the year. India is the world's largest milk producing country with a share of about

24 per cent in the world milk production in 2021-2022 (Ministry of Fisheries, Animal Husbandry & Dairying). Milk has achieved a unique status in terms of its output value and the exceeding Rs. 1, 00,000 in terms of number of milk producer and quantity of milk produced. Over the last two decades, while both population and food grain production grew at around 2 per cent, milk production grew at around more than double the growth of the population, resulted in an increasing per capita availability of milk. To enhance the production potential of our milch animals spread over the length and breadth of the country the only way is to develop superior technologies for mass adoption and to create the critical and necessary infrastructural facilities vital for adoption of the animal husbandry practices. This is a stupendous task which needs dedicated

and skilled workers to produce the desirable impact. Impacts also depend upon knowledge and adopted scientific practices in Animal Husbandry sector. Accordingly, Rogers and Shoemaker (1971) defined adoption is a decision to make full use of an innovation as the best course of action available. It is believed that the livestock owners who have more knowledge about improved animal husbandry practices are more likely to obtain higher milk production from their livestock. Dissemination of knowledge of new improved animal husbandry practices is imperative for bringing white revolution in the country. There is a complex but important inter-relationship between the level of knowledge about improved animal husbandry practices in system and its rate of adoption. The level of the knowledge of the livestock owners about animal husbandry practices will be a good indicator of its level of symbolic adoption and the efforts made by the extension agencies to disseminate and create optimum threshold knowledge.

Materials and Methods

The study was carried out in the State of West Bengal. The district Murshidabad coming from alluvial zone have been selected purposively considering the importance of dairy animals acts in the rural economy. Two blocks were selected purposively depending on highest number of dairy cattle populations from Murshidabad district namely Burwan and Khargram. In this way, A list of farmers having at least 10 numbers of dairy animals was prepared with the help of the officials working under Department of Animal Resource Development in Burwan and Khargram blocks. There after a number of 120 farmers were selected randomly from the list, so prepared to be included in the sample for the study. Using interview schedules created for the study, the data were gathered in September to November of 2023. The respondent was shown the schedule, and their responses were gathered in accordance. The total numbers of 19 independent variables along with two dependent variables i.e., Knowledge level of large-scale dairy farmers on improved animal husbandry practices (Y_1) and Adoption behaviour of large-scale dairy farmers about improved animal husbandry practices (Y_2) were selected for the study. The collected data were tabulated in MS Excel and analysis was done by using IBM SPSS 21.0 through descriptive statistics, independent samples t test, ANOVA and correlation tests.

Results and Discussion

The research study was concerned to find out the Correlation of different independent variables. With knowledge level and adoption index of the respondents. The Table 01 explains the correlation of different independent variables with knowledge level and adoption index of the respondents. From the correlation study were found to be highly significant ($P < 0.01$) when knowledge score was compared with total monthly family income, monthly income from dairy, herd size, material possession, mass media score and personal cosmopolite score but not significant with personal localite score due to lack of ignorance and awareness of improved dairy farming. However, when comparison was made with adoption index, significant correlation ($p < 0.05$) was found with monthly income from dairy and herd size. Whereas non-significant

correlation was found with total monthly family income, material possession, mass media score personal localite score and mass media score. Previous few studies different extension personnel were found several observations, like Khode *et. al.*, (2010) ^[10] through his study revealed that majority of dairy schemes beneficiaries (73.26 per cent) have medium level of knowledge regarding animal dairy management practices followed by high knowledge level with 26.74 per cent respondents. Another study was done by Singh *et. al.*, (2013) ^[17] found that most of the respondents had low level of adoption IDHP's (improved dairy husbandry practices) in breeding (44.17 per cent) and feeding (50.00 per cent) whereas, majority of dairy farmers in management (54.17 per cent), healthcare (60.83 per cent) and marketing (40.83 per cent) had medium level of adoption. Similar types of the study were found from Kumar *et. al.*, (2011), Aulakh *et. al.*, (2011) ^[1], Prajapati *et. al.*, (2012) ^[13], Rathod *et. al.*, (2012), Khanal *et. al.*, (2010) ^[8], Khode *et. al.*, (2010) ^[10], Ismet Boz *et. al.*, (2011) ^[7], Quddus (2012) ^[14] and Devi (2013) ^[4].

Table 1: Correlation of different independent variables with knowledge score and adoption index of the respondents

Sl. No.	Independent variables	Knowledge score	Adoption index
1	Monthly family income	0.494**	0.168
2	Monthly dairy income	0.434**	0.204*
3	Herd size	0.380**	0.181*
4	Material possession	0.229*	0.059
5	Mass media score	0.502**	-0.051
6	Personal cosmopolite score	0.440**	-0.059
7	Personal localite score	0.075	-0.013

** Significant at ($P < 0.01$)

* Significant at ($P < 0.05$)

From Table no 02: Independent variables wise distribution of knowledge score and adoption index of the respondents

Table 02 presented the land holding wise distribution of adoption index and knowledge score. It was evident from the study that the adoption index varied significantly ($P < 0.05$) among the landless, marginal and small farmers with higher estimates for the small farmers followed by marginal and landless farmers. This clearly indicates that the farmers having more land are more interested for adopting new technologies. Whereas it was observed that the knowledge score of land less and marginal farmers was highly significant with other two land holding categories. Similar findings were observed by Quddus (2012) ^[14] and Rathod *et. al.*, (2012).

Table 2: Land holding status wise distribution of Adoption Index and Knowledge Score

Land holding	Adoption Index	Knowledge Score
Landless (Land nil)	8.34 ^a ±0.606	40.04 ^{ab} ±2.777
Marginal (Up to 1 hectare)	9.68 ^b ±0.323	42.68 ^{ab} ±1.601
Small (Up to 2 hectares)	12.31 ^c ±0.602	59.85 ^c ±4.264
Total	9.69±0.278	43.99±1.407

^{abc} Column wise similar superscripts does not differ significantly ($P < 0.05$)

Table 03 represents the age wise distribution of adoption index and knowledge score. From the table it was revealed

that the adoption index of the young age group differ significant ($P < 0.05$) with rest of the groups. From the study also founded knowledge score was not found to be significant ($P > 0.05$) among all the age group. It implies that young age group are more aware regarding the improve Animal Husbandry practices due to their higher education level. Whereas knowledge level are not found significant ($P < 0.05$), because of adequate access to information through digital media, educational opportunity, continuous learning process, technological advancement, globalization and critical thinking skills were same as different age group.

Table 3: Age wise distribution of Adoption Index and Knowledge Score

Age	Adoption Index	Knowledge Score
Young (Up to 25 years)	7.34 ^a ±1.204	50.71 ^{abc} ±5.991
Middle aged (26-50 years)	9.67 ^{bc} ±0.302	42.28 ^{abc} ±1.583
Elderly (50 years & above)	10.42 ^{bc} ±0.708	48.38 ^{abc} ±3.328
Total	9.69±0.278	43.99±1.407

^{abc}Column wise similar superscripts does not differ significantly ($P < 0.05$)

Table 04 represents the gender wise distribution of adoption index and knowledge score. Significant differences are observed between the genders with respect to adoption index with higher estimates for males. This clearly indicates that the male farmers are more inclines towards adoption of new technologies and improved dairy farming practices. However significant ($P < 0.05$) differences were observed for the knowledge score with higher numerical estimates for males. Disparities of knowledge scores between male and female respondents could be influence by a variety of factors including societal, cultural, economic and educational consideration. Social norms and traditional gender roles may allocate certain responsibilities, including those related to Agriculture and Animal Husbandry more commonly to male. Due to less access of educational opportunities in rural area and lack of empowerment in decision making process both at house hold and community level. Female respondents were having significant less adoption index and knowledge score.

Table 4: Gender wise distribution of Adoption Index and Knowledge Score

Gender	Adoption Index	Knowledge Score
Male	9.90 ^a ±0.281	44.88 ^a ±1.430
Female	6.25 ^b ±0.654	29.71 ^b ±4.607
Total	9.69±0.278	43.99±1.407

^{ab} Column wise similar superscripts does not differ significantly ($P < 0.05$)

Table 05 represents the occupation wise distribution of adoption index and knowledge score. It was clearly observed from the table that significant ($P < 0.05$) differences exist between the estimates of labour, caste occupation, independent profession, cultivation and service with highest estimates for cultivation and lowest for service. This shows that the respondents with a service are less inclined towards farming. However, no such variations are

observed in terms of knowledge score. Belakeri *et. al.*, (2016) found that majority (75.84%) of the respondents had livestock farming along with cultivation as their occupation.

Table 5: Occupation wise distribution of Adoption Index and Knowledge Score

Occupation	Adoption Index	Knowledge Score
Labour	7.05 ^{ade} ±1.036	40.43 ^{ae} ±4.795
Caste Occupation	8.31 ^{bcd} ±2.937	45.00 ^{bcd} ±9.000
Independent profession	8.94 ^{bcd} ±0.574	45.23 ^{bcd} ±3.075
Cultivation	10.29 ^{de} ±0.318	43.49 ^{bcd} ±1.691
Service	6.25 ^{ade}	68.00 ^e
Total	9.69±0.278	43.99±1.407

^{abcde}Column wise similar superscripts does not differ significantly ($P < 0.05$)

Table 06 represents the caste wise distribution of adoption index and knowledge score. No significant ($P < 0.05$) difference was observed for the estimates of adoption index among all the categories. However, significant ($P < 0.05$) differences were observed among the different castes for knowledge score with higher estimate for OBC followed by General and SC. Disparities in knowledge score among different caste categories could be influence by – historical discrimination, access to education, economic disparities, access to extension services, land ownership pattern, cultural factors, policy intervention and social empowerment etc. Addressing these disparities required a multi faceted approach, including targeted educational initiative, improved access to resources and extension services, economic empowerment programmes and policies that specifically address the unique challenges faced by SC communities. Efforts should focus on promoting inclusivity, reducing socio-economic inequalities, and ensuring that all social categories have equal opportunities to acquire knowledge and engage in sustainable improve dairy farming practices.

Table 6: Caste wise distribution of Adoption Index and Knowledge Score

Caste	Adoption Index	Knowledge Score
General	9.79 ^{abc} ±0.289	44.58 ^{ac} ±1.442
SC	7.63 ^{abc} ±1.238	29.71 ^{ab} ±3.778
OBC	10.23 ^{abc} ±1.344	49.43 ^c ±8.272
Total	9.69±0.278	43.99±1.407

^{abc}Column wise similar superscripts does not differ significantly ($P < 0.05$)

Table 07 represents the education status wise distribution of adoption index and knowledge score. Significant ($P < 0.05$) difference was observed for the estimates of adoption index among the all categories. However, significant ($P < 0.05$) differences were observed for estimates of knowledge score among all the categories with higher estimates for graduates, which is self-explanatory. The differences may be attributed to formal education, critical thinking skills, decision making capabilities, professional learning opportunities, motivation for learning and other factor. The similar types of the study were found from Uddin and Kumar (2013), and Sharma (2014) [16].

Table 7: Education status wise distribution of Adoption Index and Knowledge Score

Education of the Respondent	Adoption Index	Knowledge Score
Illiterate	8.44 ^{abcde} ±0.607	35.08 ^a ±2.131
Primary	9.75 ^{abcde} ±0.624	42.89 ^{bc} ±2.867
Middle School	10.27 ^{bcde} ±0.472	42.8 ^{bc} ±2.449
High School	10.23 ^{bcde} ±0.577	51.46 ^{de} ±3.159
Graduate	8.83 ^{abcde} ±1.213	60.67 ^{de} ±4.216
Total	9.69±0.278	43.99±1.407

^{abcde}Column wise similar superscripts does not differ significantly ($P<0.05$)

Table 08 represents the marital status wise distribution of adoption index and knowledge score. No significant differences were observed for the estimates of adoption index and knowledge score.

Table 8: Marital status wise distribution of Adoption Index and Knowledge Score

Marital status	Adoption Index	Knowledge Score
Unmarried	7.42 ^{ab} ±1.422	53.50 ^{ab} ±6.276
Married	9.81 ^{ab} ±0.280	43.49 ^{ab} ±1.435
Total	9.69±0.278	43.99±1.407

^{ab}Column wise similar superscripts does not differ significantly ($P<0.05$)

Table 09 represents the religion wise distribution of adoption index and knowledge score. No significant differences were observed for the estimates of adoption index and knowledge score.

Table 9: Religion wise distribution of Adoption Index and Knowledge Score

Religion	Adoption Index	Knowledge Score
Hindu	9.65 ^{ab} ±0.285	44.04 ^{ab} ±1.411
Muslim	10.36 ^{ab} ±1.293	43.14 ^{ab} ±8.556
Total	9.69±0.278	43.99±1.407

^{abc}Column wise similar superscripts does not differ significantly ($P<0.05$)

Table 10 represents the family type wise distribution of adoption index and knowledge score. No significant differences were observed for the estimates of adoption index and knowledge score

Table 10: Family Type wise distribution of Adoption Index and Knowledge Score

Family Type	Adoption Index	Knowledge Score
Nuclear family	9.73 ^{ab} ±0.300	43.24 ^{ab} ±1.545
Joint family	9.44 ^{ab} ±0.755	48.53 ^{ab} ±3.213
Total	9.69±0.278	43.99±1.407

^{ab}Column wise similar superscripts does not differ significantly ($P<0.05$)

Table 11 represents the family size wise distribution of adoption index and knowledge score. No significant differences were observed for the estimates of adoption index and knowledge score.

Table 11: Family size wise distribution of Adoption Index and Knowledge Score

FamilySize	Adoption Index	Knowledge Score
Up to 5 members	9.74 ^{ab} ±0.307	43.04 ^{ab} ±1.585
More than 5 members	9.45 ^{ab} ±0.667	48.00 ^{ab} ±2.957
Total	9.69±0.278	43.99±1.407

^{ab}Column wise similar superscripts does not differ significantly ($P<0.05$)

Table-12 represents the house type wise distribution of adoption index and knowledge score. No significant differences were observed for the estimates of adoption index and knowledge score.

Table 12: House type status wise distribution of Adoption Index and Knowledge Score

House_type	Adoption Index	Knowledge Score
Kutcha house	12.50 ^{abc} ±3.02	53.00 ^{abc} ±15.45
Mixed house	8.68 ^{abc} ±0.612	40.96 ^{abc} ±3.09
Pucca house	9.93 ^{abc} ±0.310	44.70 ^{abc} ±1.59
Total	9.69±0.278	43.99±1.407

^{abc}Column wise similar superscripts does not differ significantly ($P<0.05$)

Table- 13 represents the farm power status wise distribution of adoption index and knowledge score. No significant differences were observed for the estimates of adoption index and knowledge score.

Table 13: Farm power status wise distribution of Adoption Index and Knowledge Score

Farm_Power	Adoption Index	Knowledge Score
No draught animal	9.66 ^{abc} ±0.294	43.48 ^{abc} ±1.492
1-2 draught animals	9.25 ^{abc} ±3.250	48.50 ^{abc} ±4.500
5-6 draught animals or tractor	10.11 ^{abc} ±0.947	48.60 ^{abc} ±4.985
Total	9.69±0.278	43.99±1.407

^{abc}Column wise similar superscripts does not differ significantly ($P<0.05$)

Conclusion

The study revealed that the critical role of livestock, particularly dairy farming, in enhancing the livelihoods of rural populations in India, emphasizing the need for improved knowledge and adoption of animal husbandry practices to maximize production and economic benefits. It underscores the importance of targeted educational initiatives and infrastructural support to facilitate the dissemination of knowledge and foster the adoption of innovative practices among farmers, thereby contributing to the overall development of the rural economy.

References

1. Aulakh GS, Yadav JS, Singh R. Knowledge level of dairy farmers regarding recommended buffalo management practices. Journal of Dairy Food and Home Science. 2011;12(1):147-149.
2. Bandhopadhyay AK. A study on adoption of Rabi programme and investment pattern of additional income

- by farmers of Sundarbans. West Bengal: Bidhan Chandra Krishi Viswavidyalaya; 1986.
3. Dasgupta S. Relative predictability of five indices of adoption of recommended farm practices. *Sociologia Ruralis*. 1968;8:1-21.
 4. Devi MR. Attitude, knowledge and adoption level of dairy farm women towards dairy farming. *Gujarat Journal of Extension Education*. 2013;25(2):138-139.
 5. Dhanasree K, Vijayabhinandana B, Pradeep Kumar PB. Socio-economic empowerment of tribal women in high altitude and tribal zone of Andhra Pradesh. *International Journal of Innovative Research in Science, Engineering and Technology*. 2014;3(2):9360-9368.
 6. Goswami A. A study of the knowledge level of the livestock owners about selected animal husbandry practices. Kolkata: West Bengal University of Animal and Fishery Sciences; 1987.
 7. Boz I, Cuma A, Sinan B, Boston D. Adoption of innovations and best management practices among dairy farmers of Eastern Mediterranean region in Turkey. *Journal of Animal and Veterinary Science*. 2012;9(3):251-261.
 8. Khanal BS, Trivedi MM. Comparative adoption level of improved animal husbandry practices by dairy farmers of Kheda and Panchmahal districts of Middle Gujarat, India. *International Journal of Current Microbiology and Applied Sciences*. 2010;6(11):3018-3023.
 9. Khin Mar Oo. Knowledge and adoption of improved dairy management practices by women dairy farmers in Dharwad District. Dharwad: University of Agricultural Sciences; 2005.
 10. Khode BL, Mehta BM. Knowledge and adoption level of improved animal husbandry practices by milk producers in Chhotaudaipur district of Gujarat. *Gujarat Journal of Extension Education*. 2010; Special Issue (National Seminar April 2018).
 11. Khode NV, Sawarkar SW, Banthia VV, Nande MP, Basunathe VK. Adoption of improved dairy cattle management practices under; c2009.
 12. Patil AP, Gawande SH, Nande MP, Gobade MR. Assessment of knowledge level of dairy farmers in Nagpur district and the correlation between socio-economic variables with their training needs. *Veterinary World*. 2009;2(5):199-201.
 13. Prajapati JV, Bhatt PM, Patel JB. Knowledge level of tribal dairy farm women about no-cost and low-cost technologies of animal husbandry. *Gujarat Journal of Extension Education*. 2012;23:141-146.
 14. Quddus MA. Adoption of dairy farming technologies by small farm holders: Practices and constraints. *Bangladesh Journal of Animal Science*. 2012;41(2):124-135.
 15. Saha D, Afzal HA, Hai A. Livestock farmers' knowledge about rearing practices in Ganderbal district of Jammu and Kashmir. *Indian Research Journal of Extension Education*. 2010;10(2):15-19.
 16. Sharma P, Singh GP, Jha SK. Impact of training programme on knowledge and adoption of preservation technologies among farm women: A comparative study. *Indian Research Journal of Extension Education*. 2013;13(1):96-100.
 17. Singh S, Kumar R, Meena BS. Adoption level of scientific dairy farming practices by dairy farmers of Haryana. *Indian Research Journal of Extension Education*. 2013;10(3):45-48.