

Exploring the Efficacy of a Farmer-Centric Educational Module on Dairy Innovations: Insights from the Field

PRIYA JOY KAR, H.R. MEENA, B.S. MEENA AND PH. ROMEN SHARMA¹
ICAR-National Dairy Research Institute, Karnal, Haryana

Abstract

Indian agriculture has been increasingly characterized by a diverse set of actors, relationships and policies that are required for coordinated actions to benefit farmers. A crucial sector of agriculture, the dairy industry, is also aware of this intricate connection of actors in action. There are very few studies concerning the need of documenting the Farmer-led Innovations in dairy sector for parallel diffusion. As a result, a learning module (folder) named “Farmer led Innovations in Dairying” was developed in Hindi, Punjabi, and English for the current cross-sectional survey, which was done in 2022. Thirty experts evaluated the module’s material for relevance. A 19-item scale based on the ‘Guidelines for Pretesting and Evaluating Communication Materials’ provided by the Ministry of Health, Zambia was designed to assess the efficiency of the module as perceived by the respondents across six aspects. 60 creative farmers were asked for their opinions in order to gauge how well the module was working for them. The majority thought the information was interesting and will use the module’s locally specific solutions in order to solve their simple yet complex problems in the farm. As a result, the instructional module’s perceived efficacy was strong and it might be applied to help farmers modify their behaviour in similar situations. As a result, in order to accelerate the development of new agricultural innovations, it is essential to establish a national organization, agency, board, or authority for the legitimate documentation and promotion of farmers’ ideas.

Keywords: Farmer-led Innovations, Dairying, effectiveness, content, information

Introduction

Over the course of evolution, farmers have created a variety of grassroots innovations that have raised their incomes and transformed farming into a sustainable activity. Farmer-led innovation, in which farmers take the initiative to develop new knowledge, technology, and working techniques, is increasingly recognized as being crucial to guaranteeing the social, economic, and environmental sustainability of agriculture (Ensor & Bruin, 2022). Farmers are quietly creating new methods, putting them into practice, and improving them over time. These farmer-led innovations have

not been sufficiently acknowledged or documented over the years (Baliwada et al., 2016). Furthermore, agricultural inventions’ Intellectual Property Rights (IPR) are routinely ignored. The significance of traditional knowledge and the documenting of it has frequently been disregarded by scientists. Because of this, many agricultural innovations developed by inventive farmers are not accessible to other farmers (TAAS, 2011). The development of locally distinct content is essential and varies from area to region, according to Keniston (2000). Whatever the means of communication, they should wisely and justifiably provide information that is relevant to the immediate region. According to Sendil (2010), multiple research projects in a broad variety of Indian regional

¹ICAR-Indian Institute of Maize Research, Ludhiana
Corresponding Author email: priyajoyarsext@gmail.com

languages have demonstrated the benefit of multilingual information retrieval systems. Farmers should also be empowered to interact with villages and independently document farm-level advancements. Agricultural Universities and ICAR Research Institutions might provide lab space and equipment by setting up referral centres for farmer-led inventions, which regularly need to be refined and verified (Baliwada *et al.*, 2016).

The expansion of information repositories, according to Saraswathi *et al.*, (2010), is creating both new possibilities and challenges for information retrieval. The availability of online resources in a number of different languages can be easily accessed by users worldwide to gather hitherto unthinkable amounts of information. CD lectures, according to Mallinga *et al.* (2012), helped milk traders become more knowledgeable about the production of clean milk. Farmers' knowledge, attitudes, tendency for taking risks, and educational level all have an impact on how they embrace new technologies (Kunzru *et al.*, 1994). According to Brigidletty *et al.*, (2012), farmers are not adequately recognized as participants in the innovation system, there is little information provided about the numerous knowledge sources engaged or the flow of knowledge, and little attention is paid to long-term implications on livelihoods. It's crucial to preserve the identity of the inventors and translate their databases into many languages. For each innovation, it is essential to provide channels for documentation and entrepreneurial development (Gupta, 2013). Very few studies were found particularly pertaining the importance of documentation of Farmer-Led Innovations in different languages and efficient way and its effect on adopting the new technology advances. In light of this, the research attempted to educate farmers because there is a paucity of educational resources, especially for farmer-led innovations in dairying. Given that print media is more easily accessible than other approaches and that face-to-face approaches have been found to be more effective in changing behaviours (Kaur *et al.*, 2021), the current study developed an educational module in the form of a folder called "Farmer Led Innovations in Dairying" and evaluated the relevance of its content and its perceived effectiveness.

Methodology

Haryana and Punjab states were purposively selected considering their prominence in the number of innovative farmers related to the field of dairying. The educational module (folder) was created as a part of the research project entitled "Mapping of Farmer-Led Innovations in Dairying" and was available in Hindi and English (for judges' evaluation). 30 experts from state agricultural colleges, extension offices, ICAR institutions, and private institutions used a five-point scale to evaluate the module's content relevance and quality before distributing it to the farmers.

Utilizing a scale created in accordance with the "Guidelines for Pretesting and Evaluating Communication Materials" provided by the Ministry of Health, Zambia, the perceived efficacy of the module was evaluated. It was predicted that the usefulness of the information module would increase as respondents' perceptions of its various components improved. The module's effectiveness was assessed with the help of 60 creative farmers. For the purpose of grading the traits, the farmers' comments were compiled into a Likert-type summarized rating scale with a five-point continuum from strongly agree to strongly disagree. The scale had a good degree of reliability, with a Cronbach alpha value of 0.87.

Results and Discussion

As shown in Tables 1 and 2, experts evaluated the instructional module's material in order to determine its relevance and quality. The experts determined that the teaching module's most pertinent material was the innovation generation process, model layout, and image of the dairy innovations. The experts evaluated organization, comprehensibility, Translation quality, and applicability of the material as the most significant qualities in their assessment of the module's content quality. As a result, the informational material of the module as a whole was accurate and of high quality, according to the experts.

A scale with seven defining characteristics and 19 statements was used to measure the perceived success of the program by 15 respondents from each of the four districts that were chosen, or a total of 60 inventive farmers, as shown in Table 3.

Table 1: Content relevancy assessment of the educational module by expert opinion

S. No.	Characteristics	Weighted Mean Score (WMS)	Rank
1.	The given title of the educational module is relevant.	84.53	7
2.	Contents related to Innovation Generation in the Module.	88.76	5
3.	Contents related to Innovation dissemination in the Module.	91.21	3
4.	Contents related to Innovators' details in the Module.	84.43	8
5.	Contents related to the Innovation dissemination process in the Module.	91.54	2
6.	Image on Innovation details given in the Module.	82.76	9
7.	Image on working principle of the innovation given in the Module.	84.67	6
8.	Image on Dairy Innovations relevancy given in the Module.	94.13	1
9.	Image on Dairy Model Layout given in the Module.	90.65	4

Table 2: Content validation assessment of the educational module by expert opinion

S. No.	Characteristics	Weighted Mean Score (WMS)	Rank
1.	The readability and text quality of the content is according to the context	87.64	5
2.	The comprehensibility of the content is good.	89.56	2
3.	The organization/presentation of the content is suitable for easy understanding.	90.73	1
4.	The existence of grammatical/typological errors in the content.	65.76	7
5.	Content suitability according to the readers need and interest.	87.69	4
6.	The practical implementation part of the content according to the readers need.	81.34	6
7.	The translation quality/understanding of the content in bi-lingual format.	88.56	3

The folder was deemed to be extremely helpful by a huge majority of respondents (WMS: 93.01), therefore thus was placed top. The sentence "The practices mentioned are worth following in the farm" was included under the "Motivation" category and was ranked second with a WMS of 88.67. The third-ranked statement under the "Attractiveness" aspect had a WMS value of 87.33 and said, "The contents are interesting and follow the real farm situation."

With a greater majority of respondents strongly agreeing, the statement "The layout and arrangements of the contents and images are appropriate and easily understandable" under the "Production and Designing Quality" feature was ranked fourth, while the statement "The material looks nice and the colour patterns are good" was ranked fifth with a WMS of 86.33. Sixth place went to the clarification about the "Motivation behind the

farmers interest" in the item. The section was rated seventh because more than half of the respondents strongly concurred that it will be useful for resolving issues with the farm's condition.

The print quality of the module is crisp and clean, and more than half of the respondents firmly agreed that the techniques could be applied to other farms. The assertions about the content's material's comprehensibility were placed eighth. The statements "The practices mentioned seems unrealistic and can't be followed in the farm situation" and "The jargons used in the material is scientific and tough to understand" received the lowest WMS values, placing them in nineteenth and eighteenth position, respectively.

The study's findings are consistent with those of Verma *et al.*, (2019), who reported that the educational module on Brucellosis produced for farmers had a high perceived efficacy and high

Table 3: Perceived Effectiveness of the module's characteristics and its related features

S. No.	Modules characteristics and its related features	Features		Characteristics	
		Weighted Mean Score (WMS%)	Rank	Weighted Mean Score (WMS%)	Rank
1	Identification of the Farmer-Led Innovations			93.01	I
1.1	The brochure will be very much useful for the fellow farmers	93.01	1		
2	Comprehensibility of the educational module			84.58	IV
2.1	Contents are easy to comprehend.	84.99	11		
2.2	Images and pictures used are supplementing the content	83.67	15		
2.3	The language used in the material is easily understood by the farming community	84.00	14		
2.4	The information provided is complicated and misleading	85.66	9		
3	Simplicity and clarity of the contents			82.08	VI
3.1	The jargons used in the material is scientific and tough to understand by the farmers.	75.33	18		
3.2	The material guides me to follow smart farming practices	84.67	12		
3.3	This material helps to solve my problems in my own condition.	86.00	7		
3.4	This material will be helpful for my fellow farmers with same problems.	82.33	16		
4	Acceptability among the farming community.			83.01	V
4.1	The contents in the material are unacceptable by the farmers	82.01	17		
4.2	The colour combinations used in the material is eye catching and interesting	84.01	13		
5	Motivation behind the farmers interest			74.05	VII
5.1	This material motivates me to take up innovations in my farm	86.01	6		
5.2	The practices mentioned are worth following in the farm.	88.67	2		
5.3	These practices can be adopted to a larger extent in different farms.	85.34	10		
5.4	The practices mentioned seems unrealistic and cannot be followed in the farm situation.	36.00	19		
6	Attractiveness of the material			86.83	II
6.1	The material looks nice and the colour patterns are good	86.33	5		
6.2	The contents are interesting and follow the real farm situation	87.33	3		
7	Production and designing quality			86.34	III
7.1	The print quality of the material is clean and neat	85.67	8		
7.2	The layout and arrangements of the contents and images are appropriate and easily understandable	87.01	4		

satisfaction for information function, topic Quality, and functionality. In the instance of agricultural readers, Nain (2003, 2019) revealed similar findings. Dominic *et al.*, (2023) reported the similar findings in case of an education module's identity, beauty, production quality, motivation, and understanding aspects to improve nutrition knowledge of the farm women.

Conclusions

This study shows that the majority of respondents were extremely happy with the Identification, Attractiveness, Production Quality, and Motivation features of the generated folder after assessing the impact of the folder on farmer-led

innovations in dairying. In order to raise knowledge of issue solving and developing an innovative farm ecosystem, the current study recommends launching field level customized educational interventions and programs, especially for low-income farmers. By effectively disseminating the module, the farming community as a whole may be encouraged to adopt their creative solutions on the farm. When recording community-based inventions, KVK and ATMA should be operationally interconnected. Farmers should also be empowered to independently document farm-level advancements and interact with villagers. The ability to store Farmer Led Documentation data in a single database using industry-standard software or templates has to be investigated. Therefore, in order to hasten the development of new agricultural farmer led innovations, there is an obvious need to establish a national organization, agency, board, or authority for the legal documentation and promotion of farmers' ideas.

References

- Baliwada, H.; Sharma, J. P. and Gills, R. (2016). Farmer led innovations: Retrospect and prospects. *86*(July), 1257–1264.
- Brigidletty, Zanele Shezi and Maxwell Mudhara. (2012). Agricultural Grassroots Innovation in South Africa: Implications for Indicator Development. Ideas for New Research Projects on LICs in Africa. African Globelics Seminar, Tanzania.
- Dominic, D. M.; Meena, H. R., and Niranjana, D. A. (2023). Effectiveness of an educational module on diet and nutrition: A farm women perspective from aspirational districts. *Indian Journal of Extension Education*, *59*(1), 28-31.
- Ensor, J. and Bruin, A. De. (2022). The role of learning in farmer-led innovation. *Agricultural Systems*, *197*(June 2021), 103356. <https://doi.org/10.1016/j.agsy.2021.103356>.
- Gupta, A. (2013). Tapping the Entrepreneurial Potential of Grassroots Innovation. Stanford Social Innovation Review. Sponsored Supplement. Rockefeller Foundation.
- Kaur, S.; Mann, S. K., and Kaur, M. (2021). Factors affecting adoption of home science practices disseminated through rural awareness work experience (RAWEX). *Indian Journal of Extension Education*, *57*(4), 143-146.
- Keniston, K. (2000). Grassroots ICT project in India: Preliminary Hypothesis. *Information Technology in Developing Countries*, *11*(3):60-64
- Kunzru, O.N. and Tripathi, H. A. (1994) Comparative study of adoption of dairy farm technologies between non-members and members of dairy co-operative villages. *Indian Journal of Animal Sciences*. *64*(5): 501-507
- Malliga, J.; Narmatha, N.; Uma, V.; Akila, N. and Sakthivel, K. M. (2012). Effectiveness of CD lesson on the knowledge level of milk vendors in clean milk production practices. *J.Dairying, Foods & Home Science*. *31*(1):52-54.
- Ministry of Health (n.d). Guidelines for pretesting and evaluating communication materials <https://www.nac.org.zm/sites/default/files/publications/Guidelines%20for%20pretesting%20and%20evaluating%20communication%20materials%20.pdf>
- Nain, M. S. (2003). Effectiveness of farm magazine: A comparative analysis of various components as viewed by the readers. *Rajasthan Journal of Extension Education*, *11*, 9-15.
- Nain, M. S.; Singh, R.; Sharma, J. P. and Mishra, J. R. (2019). Filling the information gap through Developing and Validating Entrepreneurial Technical Information Packages (ETIPs) for Potential Agricultural Entrepreneurs. *Journal of Community Mobilization and Sustainable Development*, *14*(1), 44-48.
- Saraswathi, S.; Asma Siddhiqua, M.; Kalimangal, K. and Kalaiyarasi, M. (2010). Bilingual Information Retrieval System for English and Tamil. *Journal of Computing*, *2*(4):85-89.
- Sendil Kumar, R. (2010). Knowledge and information source utilization pattern of soybean growers. *Indian Res. J. Ext. Edu.*, *10*(3):71-74.
- TAAS (Trust for Advancement of Agricultural Sciences) Report. (2011). Proceedings of the National workshop on Farmer-Led Innovations. Haryana Kisan Ayog. Hisar, Haryana.
- Verma, A. P.; Meena, H. R. and Patel, D. (2019). Perceived effectiveness of educational module on brucellosis in dairy animals. *Indian Journal of Extension Education*, *55*(2), 43-47.