Indian Journal of Animal Sciences **87** (3): 396–400, March 2017/Short communication

Dissemination of good dairy farming practices through interactive educational multimedia module- An innovative approach in farm technology transfer

P MOOVENTHAN[1], K S KADIAN[2], R SENTHILKUMAR[3], A KUMARESAN[4], A MANIMARAN[5] and C KARPAGAM[6]

ICAR-National Dairy Research Institute, Karnal, Haryana 132 001 India

Received: 2 June 2016; Accepted: 17 August 2016

Key words: Animal health, Breeding, Feeding, Multimedia module, Software

India is basically an agriculture country and the dairy sector plays an important role in supplementing family income and generating employment in the rural areas, particularly among the landless, small and marginal farmers and farm women, besides providing cheap and nutritious food to millions of people (Ravisankar 2015). Livestock production performance has been more impressive than food grain production but the productivity of our milch animal is very low which is a major cause of concern in Indian dairy sector (Chander *et al.* 2010). One of the major reason behind the low productivity of milk production is an increasing gap between technologies developed and actually being adopted or used by the farmers which might be due to poor information dissemination to the farmers (Prakashkumar *et al.* 2015). Non-availability of appropriate dairy technologies to all categories of farmers is the major problem for achieving sustainable dairy production. Access to information and improved communication is a crucial requirement for sustainable dairy farming. Modern communication technologies such as Interactive Educational Multimedia Module (IEMM) when used to disseminate the information in rural areas can help improve communication, increase participation and share knowledge and skills. It is essential that information availability is demand driven rather than supply driven.The expert systems developed earlier were more of text based and could be utilized only by the extension officials and scientists (Ponnusamy *et al.* 2012). To address this issue, a Hyper Text Markup Language (HTML) based multimedia module for Good Dairy Farming Practices (GDFPs) was developed with user friendly navigation and tabs.

IEMM is a product of digital computer-based systems which respond to the user's interactions by presenting the subject matter content (i.e. Good Dairy Farming Practices) through navigations, text, video clips, audio clips, images, animated elements, hyperlinks, charts, graphics elements, enriched medias etc. It helps to educate the user about a technology or process through interactive mode and can be stored and operated from any type of storage medium and can be accessed over online as well as offline mode. IEMM on GDFPs developed using HTML platform commonly referred as HTML, is the standard markup language used to create web pages and the same coding were used in IEMM. Any web browser can read the HTML files and render them into visible or audible web pages. Browsers do not display the HTML tags and scripts, but they use them to interpret the content of the page. HTML describes the structure of a website semantically along with cues for presentation, making it a markup language, rather than a programming language. It allows images and objects like audio, video and flash elements to be embedded and can be used to create interactive forms to maximize the active learning process of learners.

It is broadly classified into two major parts viz. technical component and subject matter component. Technical component of the IEMM describes the step by step procedure, techniques, tools and software used to develop this module. On other hand, subject matter component covers the Good GDFPs such as Good Feeding Practices (GFPs), Good Breeding Practices (GBPs), Good Health Practices (GHPs), Good Management Practices (GMPs) and Advances in Dairy Farming which needs to be disseminated to the target group.GDFPs underpins the production of milk that satisfies the highest expectations of the food industry and consumers (FAO and IDF 2011). Since, GDFPs taken as the subject matter to develop the IEMM. The details of GDFPs presented in the form of video documentation in five sub-heads. High definition video documentations (25) were prepared for the module and the content of the respective practices are presented in Fig. 1.

Present address: [1]Scientist (agriventhan@yahoo.co.in), ICAR-National Institute of Biotic Stress Management, Raipur. [2]Principal Scientist(kskadian@rediffmail.com), Division of Dairy Extension; [4]Senior Scientist(ogkumaresan@gmail.com), Division of AR&GO. [3]Scientist (vsenagri@gmail.com), ICAR - Central Institute of Agricultural Engineering. [5]Scientist (maranpharma @gmail.com), ICAR - National Dairy Research Institute, SRS, Bengaluru. [6]Senior Scientist (karpsicar@gmail.com), ICAR - Central Institute for Cotton Research, Regional Centre, Coimbatore.

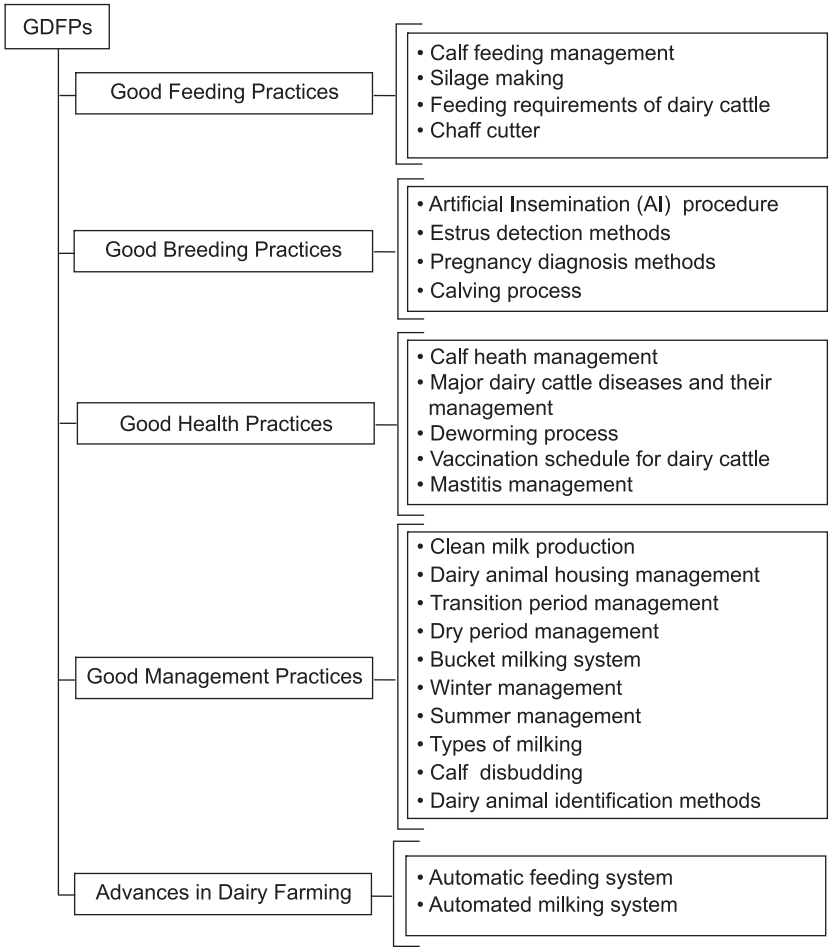


Fig. 1. Subject matter component of IEMM

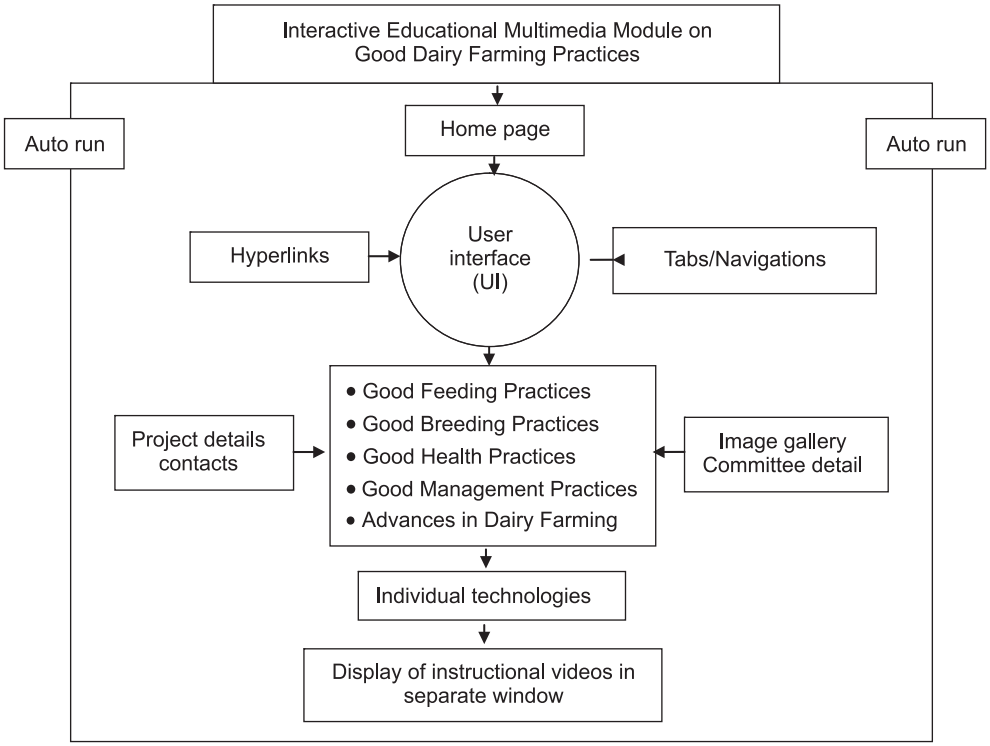
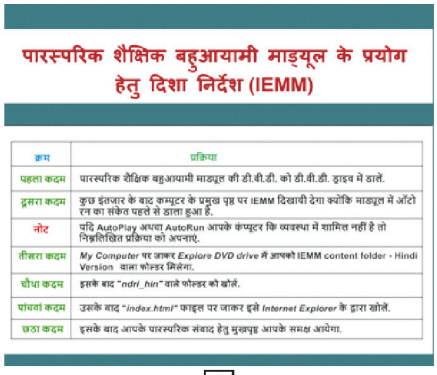


Fig. 2. IEMM functional architecture design layout

Hyper Text Markup Language is the standard markup language used to create the content in the form of web pages of IEMM. This system allow us to organise all multimedia components under a single module so called IEMM. Through this system we can add and edit text contents, video clips, audio clips, photographs, slide shows, hyperlinks, interactive menus, layouts, design, colour and other attractive graphic elements for effective interactive learning process.Through a visual WYSIWYG editor (colloquially referred to as the design view) and a code editor with standard features such as syntax highlighting, code completion, and code collapsing as well as more sophisticated features such as real-time syntax checking and code introspection for generating code hints to assist the developer in writing code. The Design view facilitates rapid layout design and code generation as it allows us to create and manipulate the layout of HTML elements for better presentation of the subject contents. After completion of the designing, the multimedia elements arranged in a proper way to facilitate the learning process. End of the completion of content building, the fully developed IEMM burned in the DVD+R9 Digital Versatile Disc (DVD) with *Autorun* setup to facilitate the interactive learning.

Out of 27 districts of Chhattisgarh; Surajpur, Balrampur and Surguja districts were selected purposively for this study since the district has higher tribal population and intensive dairying activities as well. Subsequently, four villages selected from each district using purposive sampling method and from each village 25 farmers were selected randomly. Totally, three hundred tribal dairy farmers were selected for this experimental study. The respondents are selected based on the criteria of possession of a minimum one lactating cow or buffalo and considerable educational qualification because they have to undergo pre and post exposure knowledge test. In this experimental study, the main purpose of the pre-exposure knowledge test is to measure the respondent's exiting knowledge level on Good Dairy Farming Practices. Forty one items were constructed with the help of difficulty and discrimination index. Each correct answer was given one score. This will indicate the farmer's knowledge on the subject matter before being exposed to Interactive Educational Multimedia Module on Good Dairy Farming Practices. This test is called Pre-exposure knowledge test. On the completion of pre-exposure knowledge test, the IEMM on GDFPs was demonstrated to the tribal farmers for interactive learning. The farmers were asked to open the IEMM and follow the guidelines given at the back side cover page of the module. Adequate time was given to view all the IEMM's contents. In the exposure phase, the tribal dairy farmers were motivated to self-access the IEMM's contents for effective learning. LCD (Liquid Crystal Display) projector was used to project the Good Dairy Farming Practices through IEMM. After viewing the IEMM, farmers were exposed to the developed knowledge test which covering the all subject matter contents of IEMM. At the end of the programme,

3



4

5

6

7

8

Figs 3–8. **3.** Cover page of IEMM on GDFPs; **4.** Instruction to open IEMM; **5.** Home page of IEMM on GDFPs; **6.** Content page of IEMM on GDFPs; **7.** Instructional videos of IEMM on GDFPs; **8.** IEMM of GDFPs on DVD+R9.

Table 1. Distribution of respondents according to their overall perception of IEMM (n=300)

Items	Highly satisfied		Satisfied		Not satisfied	
	No.	%	No.	%	No.	%
Sufficiency of the information provided	216	72.00	73	24.33	11	3.67
Motivation to learn subject matter	189	63.00	102	34.00	9	3.00
Easy to use and operate IEMM	164	54.66	82	27.33	54	18.00
Interesting and attractive to use	263	87.66	24	8.00	13	4.33
Possibility to store information	136	45.33	34	11.33	130	43.33
Giving comprehensive knowledge on GDFPs	268	89.33	21	7.00	11	3.67
Possibility to retrieval or re-view the subject matter contents	124	41.33	47	15.66	129	43.00
Motivate to adopt the good dairy farming practices	276	92.00	17	5.67	7	2.33
User-friendliness of the module	253	84.33	31	10.33	16	5.33
Economically feasible	156	52.00	23	7.66	121	40.33

the farmers were requested to complete knowledge test on the Good Dairy Farming Practices. Post exposure phase conducted in a informal way unlike the formal exams to reduce the learners embarrassment, phobias and ultimately increase the response. After end of this session, the knowledge gain of the tribal dairy farmers was assessed. The difference in the knowledge levels of pre-exposure and post exposure was taken as knowledge gained by each respondent. Overall knowledge gain ranges from 59.51 to 74.93% was observed in the study area.

A detailed study on various components of IEMM as perceived by the respondents was studied. To measure the perception level of respondents on Interactive Educational Multimedia Module, an exhaustive list of items looking for diverse contents were prepared. These listed items were administrated to the tribal dairy farmers. The individual farmer was requested to state on a three-point continuum namely, highly satisfactory, satisfactory and not satisfactory with the statements in his hand, with a score of 3, 2, and 1 for the responses, respectively. Based on the scores, the perception score was calculated. The overall perception level was categorized based on the identified class interval. On the basis of perception scores obtained by respondents, they were grouped into three categories namely, highly satisfied, satisfied and not satisfied. As discussed earlier, a total of 42 sub components, which determine the perception of IEMM, were spread among three main components viz., overall perception (10), message component (14) and technical components (18). Farmers' extent of perception on overall perception of IEMM as perceived by the respondents is furnished in Table 1.

It could be observed form the Table 1 that majority (92.00%) of the learners were highly satisfied and perceived the IEMM as motivator to adopt the good dairy farming practices, followed by 89.33% of the learners perceived IEMM helps to acquire comprehensive knowledge on good dairy farming practices, 87.66% of the learners perceived IEMM is very Interesting and attractive to use, 84.33% of the learners perceived IEMM were user - friendly in utility and access, 72% of the learners highly satisfied towards the sufficiency of the information provided. Learners were not satisfied with the characteristics of possibility to store information (43.33%) and possibility to retrieval or re-view the subject matter contents (43.00%). This may be due to the fact that, learners have lack of modern technology gadgets possession such as computer, DVD player, USB etc., in turn they have to depend public department (Animal Husbandry, Agriculture, Forest and Panjayat) for above said facilities which is the basic requirement to access IEMM. In the research area, developed IEMM on GDFPS were handed over to the concerned department officials for public access.The findings of the study are in conformity with the results reported by Anandaraja (2002), Mooventhan (2006) and Vidya *et al.* (2010).


9


10

Figs 9–10. **9.** IEMM demonstration; **10.** Self learning of IEMM on GDFPs by a tribal farmer

SUMMARY

The study concluded that respondents were highly satisfied with the IEMM but fewer percentage of respondents experienced difficulty in understanding of few technologies existed on it. Hence, regular training in handling IEMM tools is essential for interested progressive tribal dairy farmers to increase the adoption rate.The crux of this IEMM is to serve as effective information delivery systems for extension of technical know-how to the learners. IEMM plays a pivotal role in livestock education and ultimately helps in dissemination of current scientific information in a readily accessible format through user-friendly communication medium to all the stakeholders who involved in the dairy sector. Further, results revealed that farmers inclined towards accepting Cyber Extension. Thus, Prototype Instructions (PIs) can be taken as mission-mode outreach *via* Common Service Centers (CSC) under NeGP.

Government agencies, NGOs and private companies can commercialize such IEMMs by producing them in a cost-effective manner in such a way that it should reach the unreached. Computer access with IEMM for GDFPs can be installed in extension centers such as State Department of Animal Husbandry, State Department of Agriculture, Horticulture, KVK, ATIC, ARIS, ATMA, FTC etc., for the benefit of different stakeholders viz., farmers, students, grass root functionaries of various development departments.

ACKNOWLEDGEMENT

Authors express their sincere thanks to the tribal communities of Surajpur, Surguja, and Balrampur districts of Chhattisgarh. Authors very thankful to Dr. C K Mishra for his valuable contribution and effective organisation in the capacity building programmes. We extend our gratitude to the Director, National Dairy Research Institute, Karnal, Haryana, India for guidance, support and encouragement.

REFERENCES

Anandaraja N. 2002. 'Developing farmer friendly interactive multimedia compact disc and testing its effectiveness in transfer of farm technology'. Ph.D. Thesis, TNAU, Coimbatore, Tamil Nadu.

Chander M, Dutt T, Ravikumar R and Subrahmanyeswari B. 2010. Livestock technology transfer service in India: A review. *Indian Journal of Animal Sciences* **80**: 1115–25.

Mooventhan P. 2006. 'Impact of web education on knowledge and symbolic adoption of farmers- An experimental study.' M.Sc. Thesis, TNAU, Coimbatore, Tamil Nadu.

Ponnusamy K, Jyoti N and Sabita M. 2012. Development of women friendly expert system in crop and animal enterprises. *Journal of Extension Education* **17** (1): 90–97.

Prakashkumar R, Chander M and Yogesh B. 2016. Use of mobiles in dairying for information dissemination:A multi-stakeholder analysis in India. *Indian Journal of Animal Sciences* **86**(3): 348–54.

Ravisankar H, Naidu V S G R, Sivaraju K, John Babu B and Sivarao P V V S. 2014. Expert system for dairy cattle management. *Indian Journal of Agricultural Sciences* **84** (8): 891–96.

Vidya P, Manivannan C and Sudeep Kumar N K. 2010. Effectiveness of an educational interactive video - DVD on dairy health management practices in terms of knowledge gain among dairy farmers. *Online Journal of Rural Research and Policy* **5**: 1–17.